US West's William White wants to consolidate his Netscape intranet with Notes Web servers. Page 75

In a surprise move Apple buys Next for $400 million, brings co-founder Steve Jobs back into the fold. Page 8

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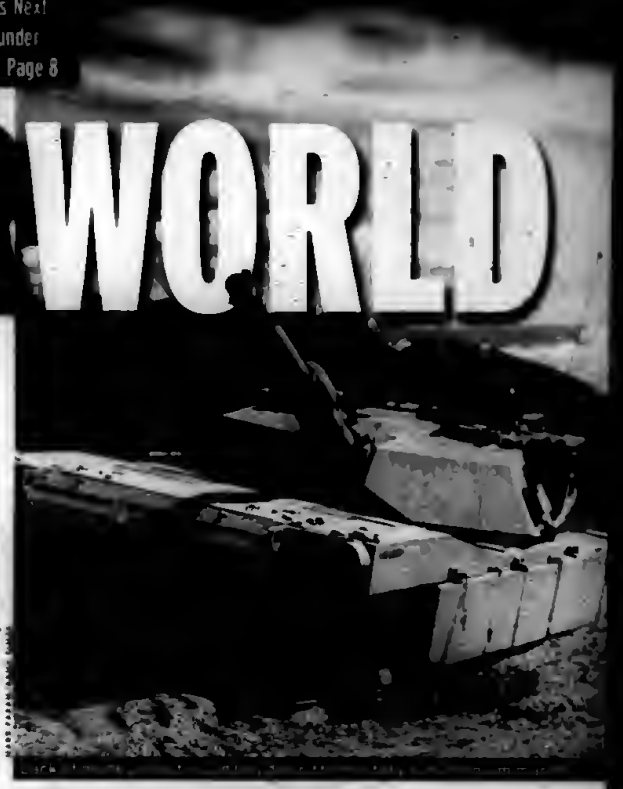

Boeing merger faces IT turbulence

By Thomas Hoffman

BEFORE THE BOEING CO.'S proposed acquisition of McDonnell Douglas Corp. takes off, Boeing will have to handle a megaoutsourcing deal, juggle staff and plow through major integration issues.

Boeing, which revealed its $13.3 billion acquisition plans Dec. 15, will also have to deal with McDonnell Douglas' outsourcing pact with IBM's Integrated Systems Solutions Corp.

In a 10-year contract that took effect in 1993, the St. Louis-based military aircraft maker farmed out 90% of its information systems operations to ISSC. The only exception was application programming.

"To get Boeing to consider outsourcing has been virtually impossible," said Susan Scrupski, editor of "IT Services Letter," an outsourcing and systems integration newsletter in Woodcliff Lake, N.J.

ALL THINGS CONSIDERED

Seattle-based Boeing may want to draw McDonnell Douglas' IS operations under its wing, Scrupski said. But Boeing is one of IBM's biggest customers, and now that IBM has folded ISSC into its Global Services group, Scrupski said she expects IBM to circle Boeing for new business opportunities.

Then there is the issue of IS staff consolidation. Boeing executives said there will be no layoffs in the short term, and there certainly will be tremendous demand for IS resources to help

Boeing, page 124

Year 2000 may ambush U.S. military

By Robert L. Scheier, Gary H. Anthes and Allan E. Alter

HUNDREDS OF FEET beneath the ocean's surface, a horrified commander watches as a torpedo he launched veers off course and races back toward his submarine.

While simulating a war in the Persian Gulf, mission planners see their screens go blank. If this had happened during an actual war, 2,700 air strikes would have been canceled or delayed.

REPORT

Both of these software glitches, which actually happened, show how errors in calculating times or dates could cost lives and cripple America's ability to defend itself. They also provide a chilling preview of what could happen if the Pentagon doesn't fix critical software. Most of that software now records dates using only two digits, so it can't cope with the date change from 1999 to 2000.

But with only three years to go before the turn of the century, critics charge that President Clinton, Congress and top Pentagon leaders are failing to move aggressively enough to avoid serious problems.

"I think the president or the vice president should declare that this is a potential national emergency," said retired Air Force General Thomas McInerney, now president of Business Executives for National Security in Washington. "He could get the resources and attention that would prevent it from becoming

Year 2000, page 5

• Government faces digital dilemma

Cybercash at risk: Money laws lacking

By Kim S. Nash

CAUSING THE INTERNET with a hard drive full of electronic cash is like walking the mall with a pocketful of bills.

If you get ripped off, that money is gone. Don't expect a refund from the financial firm that gave you the cash.

But a lot of people don't understand that. The laws that govern digital money are unclear, partly because federal and state governments have failed to revise finance rules to include the online realm explicitly.

Electronic payment is potentially an enormous market. Internet commerce is expected to ring in $6 billion by 2000, according to International Data Corp. in Framingham, Mass.

But digital cash can take various forms. Those include electronic chits to be exchanged for hard cash, smart cards with a preprogrammed value and the digital equivalent of cash in the mode of specially coded

Money laws, page 16

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Former Navy programmer Gary H. Anthes cites his experience to show how widespread problems are in military software.

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GM's first IT chief seeks 300 CIOs

By Robert L. Scheier

RALPH SZYGENDA IS looking for a few good chief information officers. Three hundred, to be exact.

Their mission: Help Szygenda revitalize the information systems organization at General Motors Corp., cut costs, invade new markets and manage GM's massive outsourcing arrangement with Electronic Data Systems Corp.

Although GM management has been imposing tighter controls on IS for several years, Szygenda said he expects to cut "hundreds of millions" of dollars more from GM's current information technology budget of more than $4 billion. His new CIOs will help by finding common software, processes and expertise that can be reused across the company.

Szygenda's other major challenge is to reduce the outsourcing bill the Detroit-based company pays to EDS, the $12.4 billion outsourcing firm that GM spun off in 1996. GM must spend at least 85% of its IS budget with EDS until 2000. Despite this semicaptive relationship, Szygenda said, EDS "is responding well to our cost-reduction effort."

Szygenda, who became the $169 billion automaker's first CIO in June, intends to install senior IS managers in CIO-type posts at the business-unit level.

"We need to align all of our investments in information systems with our business priorities [while] running information systems and services like a business," Szygenda said in late December.

The new hires will, in effect, be Szygenda's personal emissaries to the business and functional units. They will help impose order on what has been a highly autonomous IS culture. "We will be reining in the organization — you bet — if we can reduce structural costs, reduce cycle time and get benefits to the business," Szygenda said.

GM'S RALPH SZYGENDA

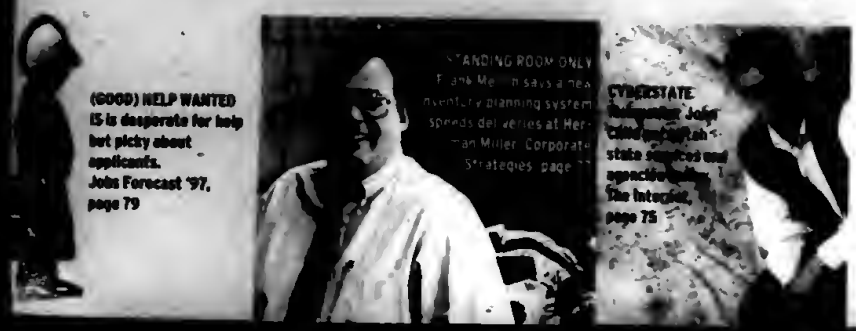
"We need to . . . [run] information systems and services like a business"

GLOBAL SEARCH

The new hires, for whom six recruiting firms are conducting a worldwide search, won't actually hold the CIO title. They will instead be called sector information officers, business information officers or process/knowledge management information officers.

Some will be responsible for IS within specific business units. Others will handle IS for cross-business functions such as product development or change management. Still others will be in charge of IS needs for functions such as human resources and finance or for various geographic areas.

Szygenda said GM's current IS staff of 2,200 will stay the same during the restructuring, but 300 IS staffers will be reassigned to other jobs to make room for the new hires. The job of this staff will be "strategic management" of technology, he said, working with EDS as technology provider.



(GOOD) HELP WANTED
IS is desperate for help but picky about applicants.
Jobs Forecast '97, page 79

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When mistakes could cost lives

▸ *No danger of stray nukes, but other problems may be lurking*

By Robert L. Scheier, Gary H. Anthes and Allan E. Alter

COULD YEAR 2000 gremlins trigger Armageddon?

Fortunately, the answer is "no," say military officials and experts in the U.S. and Europe.

While date-sensitive information is used in the software that plays a part in launching intercontinental ballistic missiles, "Every plausible implication the year 2000 may have on the computer systems involved ... has been examined and solutions have been devised," said a spokesman for the U.S. Strategic Command.

> Pentagon officials are "scrambling around ... trying to figure out how to budget it, how to approach it
>
> DOD systems integrator

Outside experts agree that year 2000 bugs won't cause an accidental nuclear launch, but they can't rule out other grim possibilities. For example, such bugs could prevent strikes from being launched because of flaws in communications systems or the systems used to maintain the missiles, the experts said.

That kind of uncertainty lurks in every weapon that relies on software — and the problems can be enormously hard to find.

Take the case of the rogue Norwegian Navy torpedoes, which in the early 1990s went off course so badly that one steered back at the ship that launched it.

Ingvar Tronstad, an electrical engineer and former Norwegian Navy commander, said the torpedoes were getting inaccurate data because updates on their location were being sent a split second earlier or later than the torpedoes expected them. Over the seconds and minutes the torpedoes ran, the errors added up and were compounded by an error in application logic, sending the torpedoes off course.

This error involved only seconds, but many such "embedded systems" use years in critical calculations, said Tronstad, now the chief scientist at Ascent Logic Corp., a systems integration and consulting firm in San Jose, Calif.

The failure of date-based filters that prioritize data could prevent the right data from getting to the right person at the right time, said Adam Luther, director of computer services at the Center for Defense Information, a Washington nonprofit watchdog group.

Even if the application itself doesn't use years, a related system that handles configuration management or maintains software licenses can fall victim to date-handling problems.

The U.S. Air Force learned that in March, when an incorrect expiration date in the license manager for a word processor shut down the application during a military exercise. As a result, the Air Force couldn't send critical mission data, grounding 2,700 simulated flights in the Persian Gulf and elsewhere until the Air Force and vendor created a fix.

After the snafu, tests of other systems revealed a similar problem that would have shut down the Combat Intelligence System, which generates information and images needed for targeting, on Nov. 11. "It's extremely fortunate that it was an exercise environment that this happened in," said Col. Carl Steiling, director of Theater Battle Management Core Systems at Hanscom Air Force Base in Massachusetts.

"The scenario that we fear most is that something like this may occur without our knowledge," Steiling said.

"If you are doing a command-and-control system in a submarine, you are very date-dependent," says one programmer. "Anything that depends on inertial navigation . . . has these date dependencies."

THE YEAR 2000 AND THE MILITARY: WHERE ARE THE RISKS?

Date dependencies lurk throughout military software. No one knows exactly where they are, but the high-risk areas include the following:

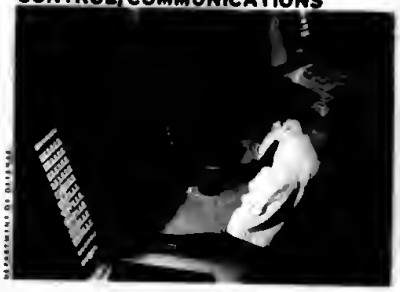
LOGISTICS

Systems that coordinate the movement of soldiers and their supplies are so critical and date-dependent that some call them the Pentagon's year 2000 "weak link."

Year 2000 bugs could prevent the shipment of critical spare parts. Date-based maintenance programs could prevent weapons from being used because the software has decided they haven't been maintained on schedule.

Many DOD logistics systems weren't built to exchange data, which makes it harder to trace, fix and test for bugs that occur between — not just within — military systems. Links also have to be checked between military logistics systems and those used by its civilian suppliers and shippers.

COMMAND, CONTROL, COMMUNICATIONS



Communications systems use dates to decide how to code and decode classified communications and to filter communications. Years are used in navigation systems, in the systems used to launch nuclear weapons and to guard against nuclear attack. Defense officials said they have fixed, or will fix, such important systems first. But ever-changing requirements make it hard to decide which systems are most critical and to test all the ways they might work together. Some observers worry that enemies will launch electronic attacks on U.S. information systems while they are dismantled for repair. In addition, the U.S. can't completely test its systems until European and Asian allies — who are said to be lagging — finish their year 2000 work.

EMBEDDED SYSTEMS

Software that runs inside of weapons generally works only for short periods of time and thus usually doesn't rely on years. But all of it must be checked anyway.

These systems can cost eight times as much to fix as civilian applications because they're often written in older, obscure languages. Poor documentation and multiple ways of calculating dates make it harder to scan for problems.

Some of the code is burned into chips that may no longer be produced. The Pentagon says many such year 2000 problems will be solved by routine maintenance. But that still leaves the possibility of bugs where embedded systems share data with other applications.

Year 2000 ambush

CONTINUED FROM PAGE 1

a national emergency."

Just as damaging as weapons failures would be snafus in logistics and transportation systems, which are very date dependent. In a national emergency, such failures could be "catastrophic," Pentagon Chief Information Officer Emmett Paige Jr. told Congress earlier this year (see story page 4).

"Will they be able to find every single date problem? Of course not," said Robert Charette, who wrote code for submarine combat systems at the Naval Underwater Warfare Center. He is now chairman of the risk management advisory board of the Software Engineering Institute and president of Itabi Corp. in Fairfax, Va.

Instead, he said, defense officials "are going to cross their fingers and toes and run with it. I will not be surprised if something real bad happens."

To be fair, the Pentagon is ahead of many civilian IS organizations, other observers said. Its top leadership recognizes the problem as critical and is pushing the armed forces to inventory their software. Various committees are also working on much-needed common standards for year 2000 testing. Managers in some defense agencies said they have already found and fixed problems in their most critical systems.

Yet despite outside estimates of up to $14 billion, Department of Defense (DOD) officials have only rough estimates in the mid-hundreds of millions of dollars. More significantly, Congress hasn't appropriated funds for the work, aside from $5 million to assess conversion tools.

Cynthia Rand

Cynthia Rand oversees the DOD's $3 billion IT budget. She says the military's year 2000 problem is tough but manageable.

The DOD established a central program office to coordinate conversion work and give advice to the services. But that office has no budgetary authority and is leaving most of the repairs to development organizations that have a 20-year record of producing poorly tested and hard-to-maintain software.

> Military code can cost up to eight times as much to fix as civilian programs. Year 2000 problems are much less common in weapons systems than in other systems, but those that exist in weapons are much harder to find and fix.

For IS managers, the Pentagon's problems could serve as Exhibit No. 1 for a strong, centralized approach to mission-critical software maintenance projects. They also show how poor development practices can force an organization to take its eyes off strategic threats to clean up problems it caused itself.

In the past, DOD developers could use obscure languages, such as Jovial, for which there are few debugging or analysis tools. Because different developers wrote date calculations differently, "there is no standard that you can scan code for," Charette said (see story page 78).

Agencies also must take money for year 2000 work out of existing programs. Paige told Congress earlier this year that could mean delaying other systems and re-engineering efforts. In some cases, rival agencies will have to compromise on which projects to kill or delay to pay for date-change work.

Cynthia Rand, principal director of information management at the Pentagon CIO's office, insisted she is seeing excellent cooperation among the services.

Defense officials said they are working aggressively to improve their software skills. But "little has changed" in the DOD's management and oversight of software development during the past 10 years, said John Stephenson, assistant director in the General Accounting Office's Accounting and Information Management Division. Stephenson is now studying the DOD's handling of the year 2000 but won't release findings until May.

Given all this, can the DOD get all its year 2000 work done on time?

"Probably not," said Bryce Ragland, an electronics engineer who heads a year 2000 team at the Air Force Software Technology Support Center at Hill Air Force Base in Utah. "There's a real risk that some wacko in another country ... might decide to launch an attack against the U.S. a few seconds after midnight just to see if our defenses can handle it."

NEWS

Older weapons could be vulnerable.

"If I were a Reserve guy flying an F-16A, I'd be a little worried."

FORMER DEFENSE PROGRAMMER

Sloppy software development takes its toll

By Robert L. Scheier, Gary H. Anthes and Allan E. Alter

THE DOD is marching toward the new millennium saddled with more than 20 years of sloppy, uncoordinated software development — a state of affairs critics say will hamper its ability to effectively fix critical systems by 2000.

"Historically, [the software has] been grotesquely balkanized" among the armed services, said John Pike, director of the Space Policy Project at the Federation of American Scientists in Washington.

When it comes to the DOD smoothly coordinating large software projects, he added, "There's not much precedent for that."

Not only was much military software written using specialty languages, but it was designed to run in relative isolation from other systems, Pike explained. As the Pentagon tried to link those various systems, "a lot of people took a lot of shortcuts," he said. That means interlinked systems might include year 2000 problems that will show up only in very specific situations.

The Pentagon is still trying to compile a complete list of systems, effected by the year 2000 date

Many reports from the General Accounting Office and the DOD itself point to poor software development practices in at least 23 military systems. In February, for example, the GAO said software in the B-1B bomber was "complex, poorly documented and has been extensively modified over the years, [making it] difficult and expensive to maintain."

That is a red flag for the Pentagon because year 2000 work is essentially a massive software maintenance job.

TESTS NOT READY

The DOD has published a "certification checklist," which allows system owners to declare applications year 2000-compliant if they meet certain criteria. But Pentagon and service officials said they aren't close to setting up actual year 2000 tests, which will ensure that systems in the services don't contaminate one another with date-change problems.

To improve its development practices, the Pentagon has been working with the Software Engineering Institute, said Cynthia Rand, principal director for information management in the office of Pentagon Chief Information Officer Emmett Paige Jr.

Paige and other top defense information systems officials have been banging the drum loudly about the year 2000, insisting that systems owners inventory their applications if they want to be considered for year 2000 funding.

Most service branches are still in the assessment phase and plan to complete conversion work by the end of 1998.

Final testing is scheduled for 1999.

Latest wave curbs Web surfing

▸ *Technology bucks interactivity trend*

By Mitch Wagner

VAYU WEB, INC. plans in January to ship technology designed to take the interactivity right out of interactive media.

Vayu Web 500 is a development tool set that allows World Wide Web developers to build presentations that resemble television commercials. "It's been called a 'cybermercial,'" said Aimee Gallagher, senior Internet designer at Vayu Web in White Plains, N.Y.

The software presents Web site visitors with a controlled sequence of screens, rather than allowing them to click on any link that strikes their fancy.

The software optimizes the display for the visitor's Web connection speed, browser and operating system. While the user sits at one page, the next page downloads in the background, officials at Vayu Web said.

Experts said the Vayu Web product could be a handy tool, but some questioned whether it will become prevalent.

"If Vayu Web stuck to just doing presentations on the Web, then it would be useful," said Michael Goulde, an analyst at Patricia Seybold Group in Boston. "But they've gotten carried away, thinking people would redesign their Web sites to eliminate interactivity."

But Vayu Web uses the time-tested approach of television. "If we can control the push of pages to the customer at a certain pace and take over the browser window, that's much more intrusive marketing than has been done recently," said Joshua Tretakoff, manager of alternative media at The Sharper Image in San Francisco. "As television has proven, intrusive marketing works."

Internet beginners will find the technology easier than the confusion of hyperlinks, and advanced users will welcome occasional hands-free browsing, Tretakoff said.

Vayu Web could ameliorate a major concern for Web merchants: the Web's unfriendliness to impulse buying, or "browsing" in the pre-Web sense. Now, Web shoppers find exactly what they want and leave without looking at or buying anything else, said Nicole Vanderbilt, an analyst at Jupiter Communications Co. in New York.

Vayu Web's software was designed to let webmasters take control of browsing experience from users

"I can see this being helpful in re-creating the shopping experience, where you're led to navigate yourself through a store in a particular manner, where you see promotional items and new merchandise first," she said.

The Vayu software runs on the Web server. When visitors stop at a page, the server downloads a Java applet to the visitor's browser. The applet controls the presentation, queuing up pages for presentation in the order that the webmaster sets.

The software will cost $2,995 per Web site for the first 60 days and $5,995 afterward. A Java-enabled browser is required.

New Alpha workstations

▸ *Digital to release 433- and 500-MHz versions*

By Jaikumar Vijayan

DIGITAL EQUIPMENT CORP. is set to raise the performance bar for Windows NT personal workstations with systems based on its fast Alpha chips.

The 433- and 500-MHz workstations, which hit the streets at the beginning of January, target the space between low-end, graphics-intensive Unix boxes and low-priced NT machines based on Intel Corp. chips. They are the first release since Digital cut Alpha chip prices in half.

According to sources close to the Maynard, Mass., company, a 433-MHz system starts at $4,995 with 32M-byte Sync. DRAM, a 2G-byte hard drive and Matrox Millennium graphics support. A 500-MHz system with 2M bytes of secondary cache, 64M bytes of Error Checking and Correcting memory, up to 4G bytes of hard disk space and PowerStorm three-dimensional graphics will start at $12,995.

WORKSTATIONS

The systems could be feisty competitors in the NT workstation arena, observers said.

"They definitely are going to be the ones to beat in this space," said one analyst briefed on the upcoming systems.

In the past few months, several vendors, including Hewlett-Packard Co., Compaq Computer Corp. and Digital, have announced Windows NT workstations based on the 200-MHz Pentium Pro, typically starting at less than $4,000.

"What Digital is offering seems to be a quantum leap over Intel capability," said David Krauthammer, information systems manager at Parker Hannifin Corp., an industrial automation company in Rohnert Park, Calif. Parker Hannifin uses a range of workstations for applications such as mechanical modeling and tolerance testing.

"There is a hole between low-end Unix workstations and Intel on the NT side. And this hole is where most [computer-aided design] applications live. Digital's workstations will plug this hole," Krauthammer said.

"Systems like these make it easier for shops wrestling with the issue of buying a Unix or NT workstation to handle their mechanical CAD and design shop-type applications," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

"Anytime you get a speed increase like this, anything that speeds up the whole rendering process is a good thing for us," said Scott Titzer, creative director at Animation House, Inc. in Evansville, Ind., which uses 366-MHz Alpha systems and expects to look at 500-MHz versions soon.

DATABASES

Users eager to get Oracle8

By Craig Stedman

ORACLE8 IS inching closer to reality, and impatient users are champing at the bit.

Oracle Corp. plans a January delivery for the second beta-test release of its long-promised new database. This version will have all of the functionality that is supposed to be included when the object-enabled software finally ships in mid-1997, according to Oracle executives.

Some Oracle8 beta testers will also get advance copies of a companion object development tool code-named Sedona. That will be the first time users will see a combination of the two products, which will let Oracle answer the object/relational Universal Server database that Informix Software, Inc. was due to ship in late December [CW, Dec. 9].

McKesson's Charles Nettles

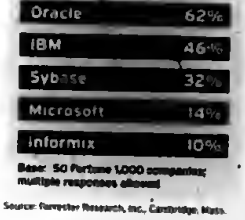
Object technology "is rapidly becoming the present for us, not the future"

Oracle has been promising Oracle8 for more than three years. Several customers said they want to get their hands on the software fast to take advantage of its increased multimedia support and the mainframe-like scaling and management niceties that Oracle has promised.

McKesson Corp. has some of the initial Oracle8 beta code in-house and expects to start testing both the database and Sedona in mid-January, said Charles Nettles, director of technology at the Information Technologies division of the San Francisco-based pharmaceuticals distributor.

THE RATINGS, PLEASE

Which database vendors are strategic to your company?



Base: 50 Fortune 1,000 companies; multiple responses allowed

Source: Forrester Research, Inc., Cambridge, Mass.

The company is about to go live with an object-based decision-support application aimed at its customers, but for now, the data still must be stored in relational form in the current Oracle7.3 release. Being able to store information as objects in Oracle8 "should mean better performance," Nettles said.

Longer term, McKesson wants to develop server-based distributed object applications that would let it slim down its desktop boxes and simplify the mix of middleware needed to connect clients to servers, Nettles said. But he also said Oracle has told him support for the Object Management Group's Common Object Request Broker Architecture probably won't be built in to the first release of Oracle8.

AMBITIOUS PLAN

Together, Oracle8, Sedona and a network computing architecture detailed by Oracle last fall are "a really ambitious" undertaking, said Donald A. DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass.

But Oracle8's "long birthing process" let Informix get ahead in supporting objects and multimedia data, DePalma added. "Oracle has to get this thing out."

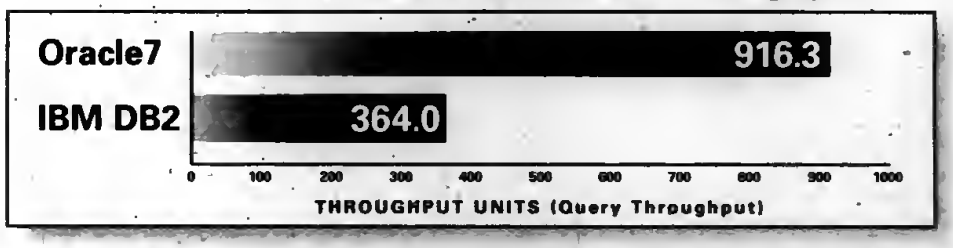
Ron Hawkins, director of information technology at Millipore Corp. in Bedford, Mass., said he wants to simplify his company's architecture by moving complex data such as images from Notes to his 30 Oracle databases. Storing everything in one place will hopefully let Millipore "move fast when new business needs come up," Hawkins said.

New Oracle8 features such as database partitioning and server-managed backup will also be welcome additions, according to Hawkins. "I don't want to have to figure out when I have to load control files [into the databases]. Oracle should know how to do all that nonsense."

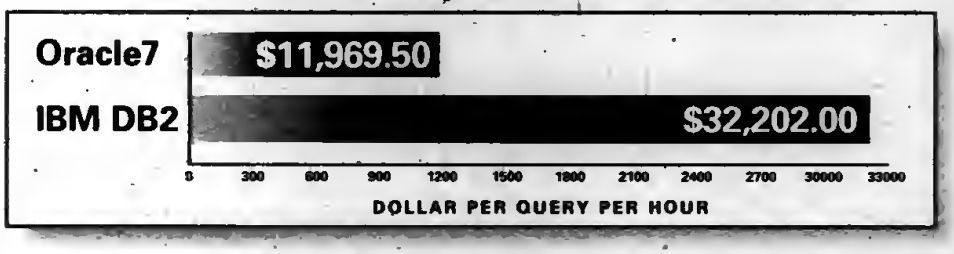
Oracle7 Parallel Server: Almost 3 Times Faster than IBM DB2/Parallel Edition

The TPC-D is the industry standard benchmark for measuring query performance on large complex databases. On the fastest hardware that IBM makes, the RS/6000 SP, running against an identical 300 GB data warehouse, Oracle7 Parallel Server's TPC-D performance was almost twice as fast with almost three times the throughput as IBM's own DB2/Parallel Edition. What's even more amazing, Oracle delivered this performance at nearly one-third the price.

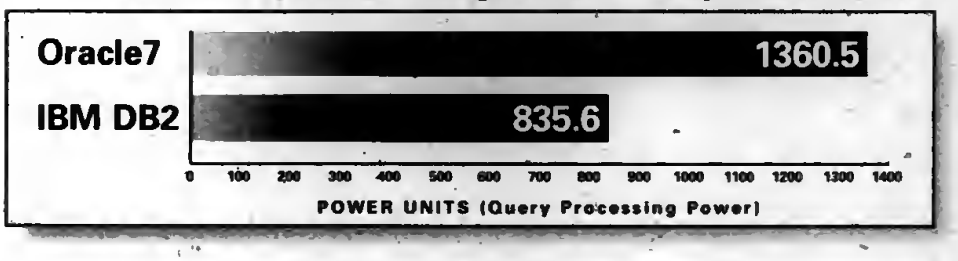
Almost 3 to 1 Faster Multi-user Throughput



Almost 3 to 1 Cheaper Price Performance



Almost 2 to 1 Better Single User Response Time



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Jobs is back: Apple buys Next for $400M

By Bob Wallace and Elinor Mills

APPLE COMPUTER, INC.'S $400 million-plus purchase of Next Software, Inc. — which will return co-founder Steven P. Jobs to Apple — should dramatically shake up the sluggish PC maker and strengthen its sputtering operating system strategy, industry experts said.

In mid-December, after somewhat public negotiations with Be, Inc. to purchase its multimedia operating system, Cupertino, Calif.-based Apple agreed to buy all of the privately held Next's products, services and technology. Jobs, Next's chairman, chief executive officer and founder, will report to Apple Chairman and CEO Gilbert Amelio.

Analysts said Be founder Jean-Louis Gassee, a former Apple executive, asked for too much money. In a pun at the expense of Gassee, Amelio said: "We picked plan A instead of plan B."

Neither Next nor Be officials could be reached for comment.

Amelio said Jobs will help Apple develop its next-generation operating system, via the integration of the NextStep development technology, and embrace open systems.

STRATEGY SESSION

The new Macintosh operating system incorporating pieces of Next technology will be available in beta in late 1997 on the PowerPC platform, but it won't operate with System 7 applications until 1998. Apple will lay out its strategy at MacWorld, which opens Jan. 7.

NextStep is a cross-platform, object-oriented, Java-enabled, development environment that has in the past been licensed to other companies, including IBM. Apple's own object-oriented development efforts have centered on the Mac OS and most recently, the Copland upgrade, which after many delays has metamorphosed into periodic operating system upgrades.

"As we looked at various partners for our operating systems development, we discovered that Apple and Next had surprisingly complementary products, technologies and services," said Amelio in a letter to Apple users. "Apple needed a truly modern operating system, and Next has an exceptional operating system with modern services and [application programming interfaces]. ... Next needed a high-volume installed base, and Apple has sold more than 26 million Macintosh systems."

Some analysts see the Next acquisition as good news for Apple and users.

"We've had serious concerns that Apple has been falling behind in the [operating system] market and needs an answer to [Microsoft Corp.'s] NT Workstation," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass. "Buying Next and bringing Jobs back will shake Apple to the core and give it an infusion of charisma and leadership."

Also a plus, NextStep will give the Mac OS ties to Unix-based platforms. "There's a synergy between what Apple has done programming-wise with Unix and what Next is based on," Stephen said. By comparison, Be, from which Apple has reportedly discussed licensing Be OS, has no Unix linkage.

FIRST STEP

But analysts caution that the merger is only a first step toward Amelio's goal of a "truly modern" operating system. Backward compatibility is one issue.

"Backward compatibility, in a very rich sense, will be provided in 1998" for existing applications, said Ellen Hancock, chief technology officer at Apple, speaking at a teleconference.

Scott Winkler, an analyst at Gartner Group, Inc. in Stamford, Conn., said developers and users will revolt if the new Mac OS doesn't provide backward compatibility. "Yes, it's true the Mac OS doesn't have multitasking and isn't a modern operating system, but an abrupt change to something else is going to create turmoil," he said.

An official at the largest Macintosh users group in the world wasn't worried about backward compatibility. "People are really migrating toward PowerPC anyway because of the power and speed," said Ann Wrixon, executive director of the Berkeley Macintosh User Group, which has 10,000 members.

More important than the technical details is that Apple shows some leadership and direction, she said. "We just want [Apple] to make a decision and stick to it," Wrixon said.

— Kim S. Nash contributed to this story.

Retailers leverage IT to handle holiday crunch

By Thomas Hoffman

SOPHISTICATED forecasting systems didn't help retailers anticipate consumer frenzy over a furry monster that giggles when tickled.

Although unanticipated demand for Tyco Toys, Inc.'s Tickle Me Elmo led the little guy to sell out at many locations, many retailers this season were able to leverage technology to help them cash in on what analysts described as the biggest holiday spending spree in four years.

Thanksgiving weekend sales rose 11% over last year, according to an International Council of Shopping Centers survey of 24 malls.

Retailers are investing heavily in systems designed to keep inventories lean by replenishing stock quickly, said Joel W. Wyman Jr., a managing partner at ISYS Consulting Group Ltd. in Huntington, N.Y.

Laggards that rely on week-old sales data typically miss 10% to 30% of sales opportunities because of stock shortages, said Ann Grackin, a partner in the supply-chain practice at Benchmarking Partners, Inc. in Cambridge, Mass.

Not so at Kay-Bee Toy Stores, where a new client/server-based planning system helped the toy chain achieve double-digit sales growth this season. The Pittsfield, Mass.-based retailer in September replaced its mainframe-based planning system with a homegrown IBM RS/6000-based application.

The system interfaces with Kay-Bee's IBM mainframe-based Inventory Forecasting and Replenishment Modules (Inforem) system, which tracks sales of each toy.

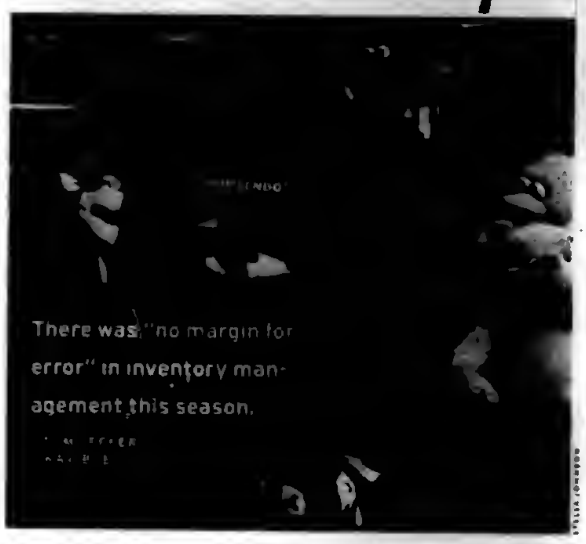
If sales are higher than forecast, the Inforem system notifies personnel to send additional toys to the stores.

Now, buyers for the 1,100-store chain can point and click immediately to sales data for individual toys instead of having to sift through day-old spreadsheets.

HAD TO BE PERFECT

With five fewer shopping days this holiday season, there was "no margin for error," said Tom Jeffery, vice president of management information systems at Kay-Bee, which does 40% of its $1.2 billion in annual business between Thanksgiving and Christmas.

Meanwhile, buyers for Sears, Roebuck and Co. in Hoffman Estates, Ill., this season used a neural network-based system from Churchill Systems to help them forecast demand for big-ticket items such as dishwashers and refrigerators.



The system was designed to forecast the effectiveness of advertising promotions based on more than 70 factors that are plugged in to the system, including the size of the ad and whether there are extra incentives for salespeople.

Sears this year also launched a fashion allocation system it developed internally to determine demand for certain clothing sizes in various geographic locations. "We have a lot of stores with Hispanic and Vietnamese concentrations in Southern California with small size requirements," said Ann Raives, a vice president in the merchandise planning office at Sears.

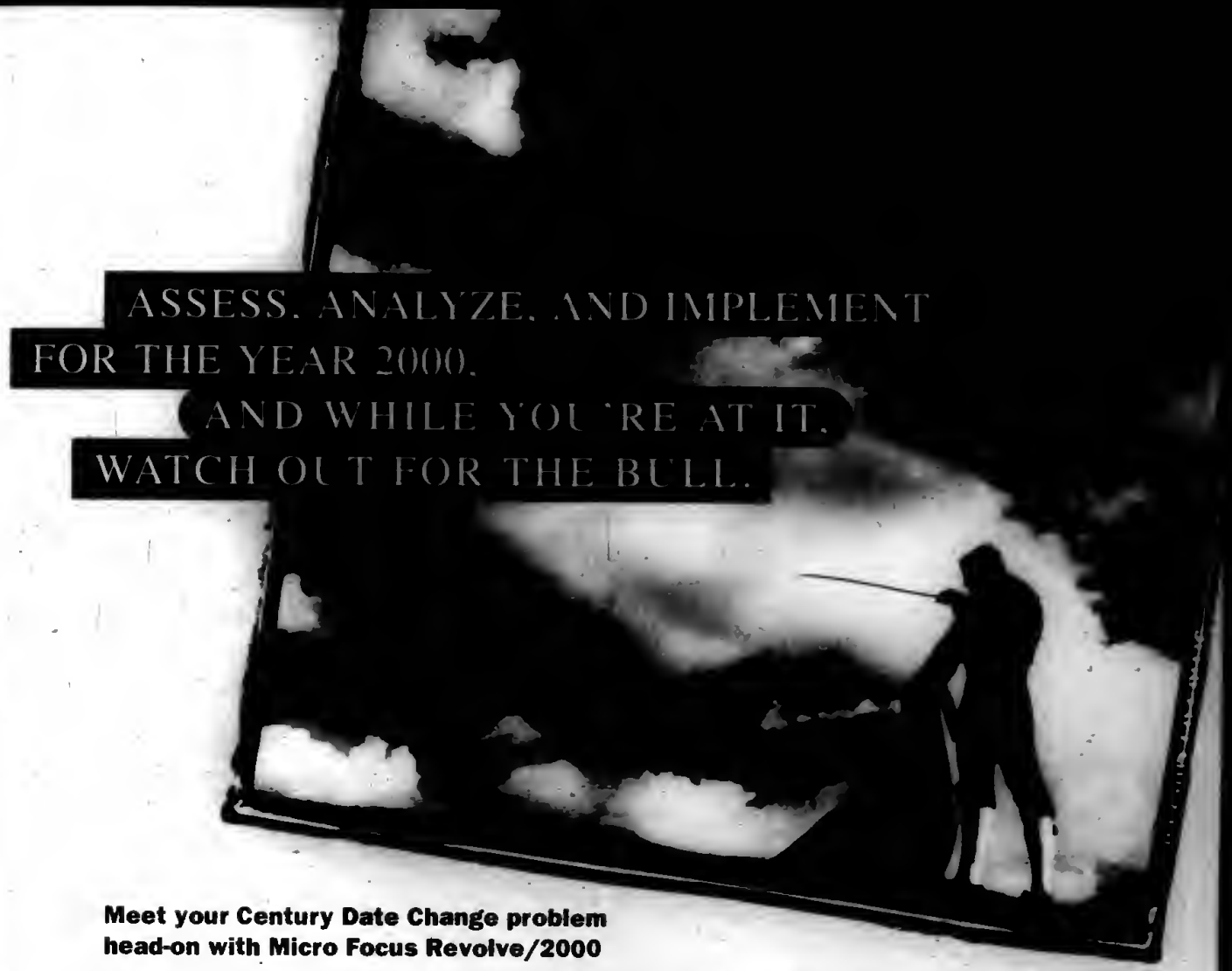
Raives declined to quantify the impact the systems are having at Sears, but she said the retailer was on track to outperform the industry.

Other strong sellers this holiday season included merchandise from Walt Disney Co.'s *101 Dalmations* movie, which accounted for 18% of sales at The Disney Store's 556 outlets, said Barry Adam, director of information services at the Glendale, Calif., chain.

The Disney Store two years ago modified its IBM RS/6000-based inventory management systems so advanced shipping notices could be entered in to the system. That allows the company to allocate merchandise before it reaches the retailer's distribution center in Memphis.

In 1994, when none of Disney's merchandise was cross-documented, it took seven to 14 days to allocate goods in the distribution center and ship them to stores.

Today, more than 40% of all goods are cross-documented and reach the company's stores within three days.



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Upgrade delay is OK with Exchange users

By Barb Cole

USERS LAST WEEK generally welcomed Microsoft's plan to delay delivery of Exchange 4.5 for a more Internet-ready version of its client/server messaging system. But large sites, in particular, continue to push for architectural fixes that will make it easier to deploy Exchange across an enterprise.

Officials at Microsoft Corp. recently said the company would scrap Exchange 4.5, originally slated for December release, in favor of an already planned 5.0 upgrade that boasts better Internet hooks. That release is scheduled to ship during the first quarter of 1997.

A lukewarm user reception for the 4.5 beta release (CW, Dec. 2) helped drive Microsoft back to the drawing board and on to 5.0, but Exchange devotees cautioned that 5.0 won't have everything on their wish lists.

"The stuff we want is not going to be in the [5.0] release," said Bob Winterton, a systems specialist at Consolidated Edison Co. of New York, Inc. He said ConEd is looking forward to expanded mail server storage, now fixed at 16T bytes. The utility and other early adopters will have to wait another 45 days after Exchange 5.0 ships for that fix, Microsoft officials said.

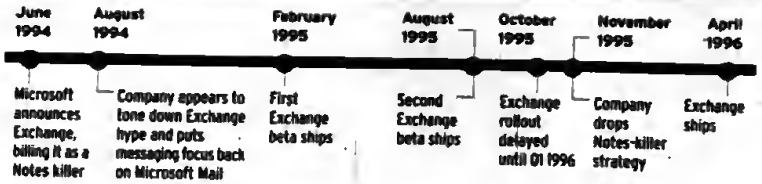
Also missing from 5.0 are improved support for symmetrical multiprocessing machines and Windows NT clustering and better tools for managing distributed Exchange servers. An early adopter at a financial services firm, who requested anonymity, said the lack of these features had slowed deployment, but the company had no plans to scale back its Exchange effort.

"It's disappointing [for large Exchange sites] not to get some of the features they need," said Joyce Graff, an analyst at Gartner Group, Inc. in Stamford, Conn. "But Exchange is really a 1.0 product, and what 1.0 doesn't have issues?"

The new features in Exchange 5.0 will include support for Hypertext Markup Language data types and Net News Transport Protocol on the client and server. Those stronger Internet hooks will let Exchange users deploy World Wide Web browsers as mail clients and put Exchange on a more even playing field with Lotus Development Corp.'s Domino server.

Delaying the upgrade was a wise move for Microsoft in light of the growing demand for messaging servers that support Internet protocols, analysts said.

A LONG ROAD OR A MAJOR STALL?


June 1994
Microsoft announces Exchange, billing it as a Notes killer
August 1994
Company appears to tone down Exchange hype and puts messaging focus back on Microsoft Mail
February 1995
First Exchange beta ships
August 1995
Second Exchange beta ships
October 1995
Exchange rollout delayed until Q1 1996
November 1995
Company drops Notes-killer strategy
April 1996
Exchange ships

IBM's AS/400 snuggles up to NetWare

By Tim Ouellette

IBM IS TIGHTENING AS/400 integration with Novell, Inc.'s NetWare so users can cut down on the number of servers they run and the amount of administration they perform.

Users see a fit between the two because the AS/400 is a strong application server, whereas NetWare's strengths lie in file-and-print serving.

AS/400 HOLDS TIGHT TO NETWARE

Product	Features
AS/400 integration for NetWare (on AS/400 PC Server)	File serving
	LAN-to-LAN printing
	Runs NetWare applications
AS/400 Enhanced integration for NetWare	Volume management
	Connection management
	Integrated file systems
	AS/400-to-NetWare printing
	Runs NetWare applications
	User and password synchronization

In fact, IBM officials estimate that nearly 40% of AS/400 shops also run NetWare.

"We are pleased that IBM now supports NetWare on the RISC models of the AS/400," said Mike Cornwell, a senior programmer and analyst at Colson Caster Corp. That way, the Jonesboro, Ark., company can deliver much-needed file-and-print sharing to its engineering department and keep administration within IS, he said.

Specific IBM moves include the following:

- Support for the recent NetWare 4.11 upgrade on the AS/400's Integrated PC Server, an Intel Corp. PC board inside the AS/400 box. The PC Server runs only as a NetWare 4.x server, not NetWare 3.x.
- Shipment of Enhanced Integration for NetWare, an option for AS/400 RISC boxes that offers features for both NetWare 3.x and 4.x users (see chart).
- Client Access for Windows 95 and Windows NT will support NetWare's IPX protocol next year. That will eliminate the need for separate network servers to support network clients.
- IBM next year will support NetWare backup utilities, including Cheyenne Software, Inc.'s Arcserve, to back up NetWare data directly into AS/400 tape drives.

AS/400 users must run either OS/400 Version 3 Release a (CISC models) or Version 3 Release 7 (RISC models) to handle NetWare 4.11 on the Integrated PC Server, IBM officials said.

The combination of NetWare on the AS/400 lets users with few maintenance and technical job resources combine two simple platforms under one hood. And large companies with many NetWare servers can reduce hardware costs by consolidating LAN support on the AS/400.

"The AS/400 with NetWare is one of the most reliable systems we have, even though the PC board uses a 486 processor," said Dana Ingraham, LAN manager at Dovagron Manufacturing New York in Binghamton, N.Y.

But while IBM keeps strengthening its bonds with Novell, users and analysts say Windows NT should also be a priority for the AS/400 (CW, Nov. 3). In fact, Gartner Group, Inc. in Stamford, Conn., predicts Windows NT will be IBM's most strategic operating system in five years.

IBM will eventually support Windows NT on the Integrated PC Server, said Ian Jarman, director of network operating system marketing at IBM's AS/400 division. He wouldn't give a delivery date.

FCC mulls change that could end flat-rate access

By Kim Girard

UNLIMITED INTERNET access for $19.95 per month could be a thing of the past if the federal government revokes a rule that lets Internet service providers avoid paying per-minute usage fees to local carriers.

The Federal Communications Commission, responding to pleas from the regional Bell operating companies (RBOC), is gearing up to investigate doing away with the 13-year-old exemption.

INTERNET ACCESS

By Christmas, the FCC is expected to open debate on redefining how local telephone companies are compensated for use of their lines. Final rules aren't expected until spring.

But even without federal intervention, the flat-rate service — used by many telecommuters and road warriors — may fall victim to economic pressures.

For example, Netcom On-Line Communications Services, Inc. last week scrapped its $19.95 flat rate, calling it "crazy."

Jeffrey Kagan, president of Kagan Telecom Associates in Atlanta, said it is unlikely that service providers will be forced to pay access fees.

"[FCC Chairman Reed Hundt] doesn't want to do anything to hinder this budding industry," Kagan said.

"It could have a devastating effect" on service providers, said Tom Earl, network engineer at Coast to Coast Telecommunications, a service provider in Clarkston, Mich. "If the FCC regulates, the entire market will take a hard nosedive."

To support their argument for higher fees, the Baby Bells use questionable data, according to the Internet Access Coalition, a group of computer and data communications companies.

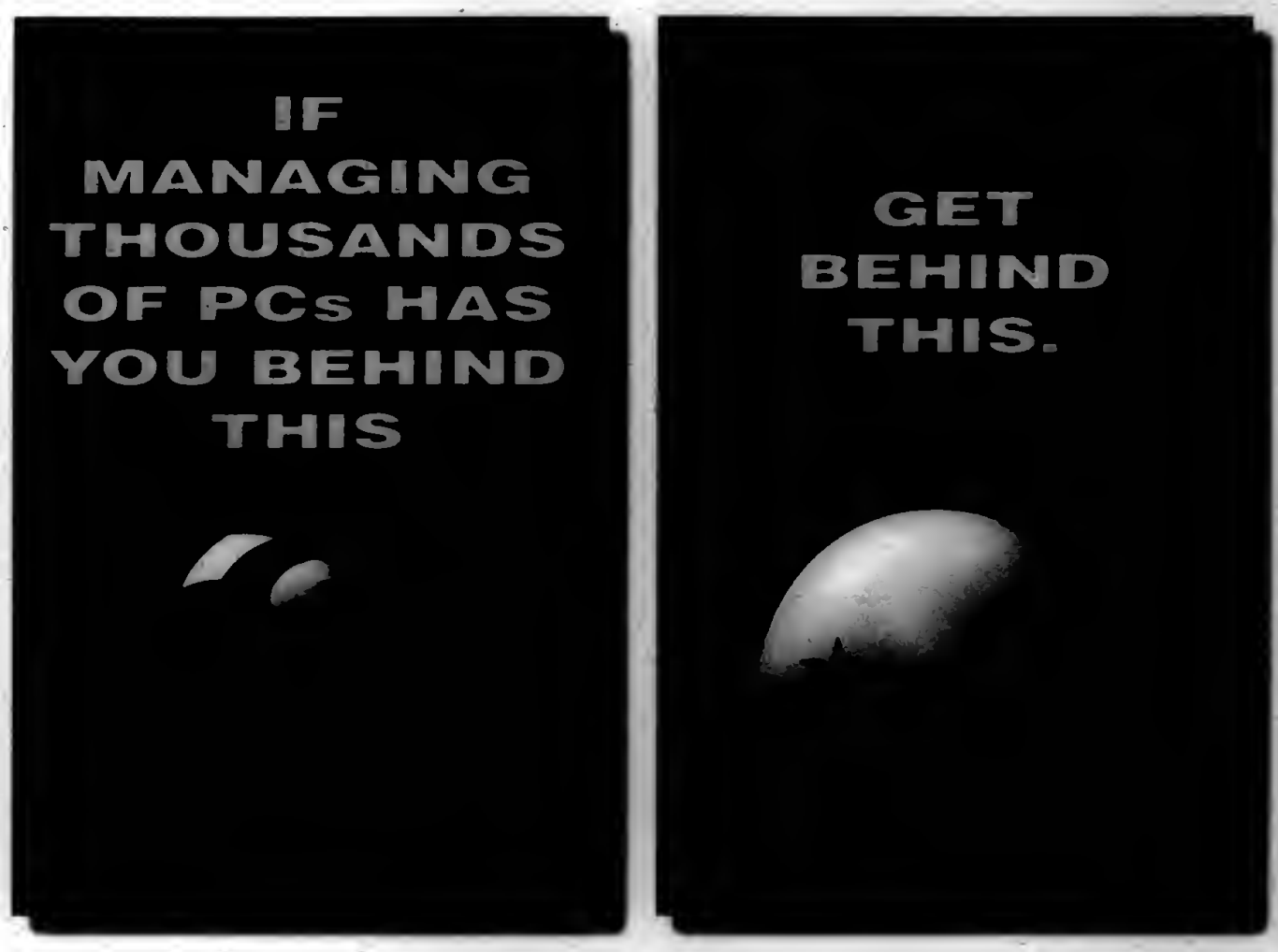
"The telephone network congestion problem is wildly overstated by the RBOCs," said Paul Misener, spokesman for the Internet Access Coalition and manager of telecommunications and computer technology at Intel. The RBOCs are also making millions by marketing second phone lines for Internet access, Misener said.

But that revenue doesn't cover the cost of supporting growing Internet traffic on the network, argued Jim Diestel, director of advanced services marketing at Pacific Bell.

"Ultimately, these are dollars [service providers] should be contributing," Diestel said.

Whether Internet service providers should pay more to the RBOCs is only part of the FCC's overall mission to look at how local carriers will be compensated for use of their lines.

First, the FCC is expected to consider long-distance carriers' demand that the Baby Bells reduce the average 2 to 4 cents per minute they charge for completed calls.



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Software improves intranet access, security

▸ *Netscape Certificate Server 1.0 beta lets IS manage digital certificates*

By Justin Hibbard

NETSCAPE COMMUNICATIONS CORP. last week released server software that creates the digital equivalent of company identification cards for intranet access.

The vendor unveiled the first public beta of Netscape Certificate Server 1.0, which lets information systems departments create, sign and manage digital certificates. The certificates are files that verify a user's identity.

Netscape's server promises to provide highly secure messaging and access to multiple intranet servers and applications through one log-on.

DELAYED DEPLOYMENT

Users said the product has lots of potential, but they added that concerns about a missing client feature and the hardware demands of encryption are preventing them from deploying the server right away.

Eli Lilly's John Swartzandruber says one ID and password for network access would be an advantage

Certificate Server issues certificates based on a standard format called X.509V3. The certificates are encrypted by a public key and can be decrypted only by a private key, which resides on a machine that receives the certificate in a message.

IS departments can configure servers on a network to accept only certificates signed by a particular authority. Administrators can configure their networks to let users access all servers with a single log-on.

"If we could allow people to start using one ID and password and have that carried around the network with them, that would be a great advantage," said John Swartzendruber, technical manager of Internet services at Eli Lilly & Co. in Indianapolis.

Swartzendruber said he hasn't tried Certificate Server. But Sherman Woo, director of US West Global Village Labs at US West, Inc. in Boulder, Colo., has been beta-testing the product for six months.

"We've been pretty pleased with what we've seen," Woo said. "But we don't feel that this is ready to use in a serious operational mode as yet."

Woo said users won't be able to use certificates issued by Certificate Server to secure electronic mail until Netscape releases the final version of its Internet client suite, Communicator, now in beta.

Communicator's E-mail component, called Messenger, will use Secure Multipurpose Internet Mail Extensions (S/MIME) to transport certificates. The current beta version of Messenger doesn't support S/MIME, Woo said. But Netscape has promised S/MIME support in the final version, due in the first quarter of 1997.

Woo said he also worries about the burden that encryption places on his servers. "The encryption and decryption of data suck up a lot of the computing power we're enjoying now," he said.

Carl Howe, senior analyst at Forrester Research, Inc. in Cambridge, Mass., said digital certificates are effective for establishing a user's identity. But for other security functions such as privacy and integrity, users may need additional technology, such as smart cards, he said.

HITS THE SPOT

Netscape SuiteSpot 3.0 (all servers available for major flavors of Unix and Windows NT 3.51 and 4.0)

Server	Availability
[redacted]	Q1 1997
[redacted]	Q1 1997
[redacted]	Q1 1997
[redacted]	In beta
[redacted]	In beta
[redacted]	In beta
[redacted]	In beta
[redacted]	In beta
[redacted]	In beta

"In the future, we see certificates getting married to smart cards," Howe said. "Then, it's not only something you know [the certificate], but it's something you have [the card]."

Certificate Server is part of Netscape's SuiteSpot World Wide Web server product line.

OS/2 lets users talk back to 'net

▸ *Native version of Netscape Navigator allows voice commands*

By Laura DiDio

OS/2 USERS may soon be doing less clicking and more talking. IBM last week released a native OS/2 version of the Netscape Navigator browser that lets users surf the Internet using simple voice commands.

The software melds the embedded speech-recognition and dictation features of OS/2 Warp 4 with the latest 2.02 release of Netscape Communications Corp.'s Navigator browser, said Donn Atkins, vice president of marketing at IBM's Personal Software Products group.

SPEECH RECOGNITION

The Java-enabled browser runs on OS/2 Warp versions 3 and 4 and with OS/2 Warp Connect. It is available as a free download from the Netscape home page (www.netscape.com) and the IBM software home page (www.software.ibm.com).

Michael Haun, president of Bell-Haun Systems, Inc., a Westerville, Ohio-based telephone company, said IBM's early and comprehensive support of Netscape and Java will give OS/2 Warp a shot in the arm.

Users and analysts hailed the move, saying that IBM has broadened the scope of Internet content and connectivity currently available to OS/2 Warp users via the Internet.

"The enhancement's great news for us, since we and many of our customers are all using the Netscape Navigator and developing Java-based applications. It will make communications with our customers a lot easier," said Bill Teags, information systems manager at Advanced Package Engineering in Phoenix.

"The documentation is excellent — better than the OS/2 Warp 4 documentation, in fact. And it's robust and easy to use," Teags said.

And because it supports the IBM VoiceType speech-recognition facilities in OS/2 Warp 4, users can tell their PCs to "jump" to an Internet site and navigate by saying the names of links or commands such as "page up," "scroll down" or "back."

NOW FEATURING ...

OS/2 Warp 4 with built-in Netscape Navigator 2.02 support also features:

- **The new beta of Java Version 1.0.2 for OS/2, which boosts the performance of Java-based applications by 35% to 40% over Version 1.0.1**
- **Netscape's HTML-enabled mail and news applications**
- **Built-in JavaScript to enhance HTML capabilities and let users open and view live Java applets and applications**
- **Frame support, which lets users specify multiple independent areas within a display window**
- **Support for selected Windows 3.1 multimedia plug-ins to extend the capabilities of Netscape Navigator**

BETA SOFTWARE

Netscape makes E-mail high priority in client suite

By Justin Hibbard

E-MAIL TOOK center stage last week as developers saw a preview of Communicator, Netscape Communications Corp.'s forthcoming Internet client suite that includes Navigator 4.0.

But the beta version doesn't implement most of the new features Netscape had previously announced, according to developers.

Of the few new features included, many are related to electronic mail, the application Netscape has targeted as its highest priority in 1997, developers said.

"Most of the advances in it are in messaging and groupware," said Angus Davis, a developer at Intelecom Data Systems, Inc. in East Greenwich, R.I. "Navigator itself hasn't received a lot of attention."

Communicator's beta features tight integration between Messenger, the E-mail client component, and Composer, the Hypertext Markup Language (HTML) authoring component. Users could create HTML pages, including graphics and forms, and send them as E-mail messages, developers said.

Also featured is support for the Lightweight Directory Access Protocol (LDAP), which lets users query LDAP-compliant servers to locate other users, and E-mail filters that automatically direct incoming messages into particular files.

E-MAIL KEY

The emphasis on E-mail in the beta release is consistent with the message Netscape has been delivering since it held its developers conference in October, according to Randy Hancock, director of Gemini Consulting, Inc.'s C4 Labs in Cambridge, Mass.

"Netscape really believes that one of its biggest opportunities in 1997 [lies in] simplifying corporate E-mail systems," Hancock said.

Netscape officials said a public beta was scheduled to be available Dec. 23.

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▸ *Native version of Netscape Navigator allows voice commands*

By Laura DiDio

OS/2 USERS may soon be doing less clicking and more talking. IBM last week released a native OS/2 version of the Netscape Navigator browser that lets users surf the Internet using simple voice commands.

The software melds the embedded speech-recognition and dictation features of OS/2 Warp 4 with the latest 2.02 release of Netscape Communications Corp.'s Navigator browser, said Donn Atkins, vice president of marketing at IBM's Personal Software Products group.

SPEECH RECOGNITION

The Java-enabled browser runs on OS/2 Warp versions 3 and 4 and with OS/2 Warp Connect. It is available as a free download from the Netscape home page (www.netscape.com) and the IBM software home page (www.software.ibm.com).

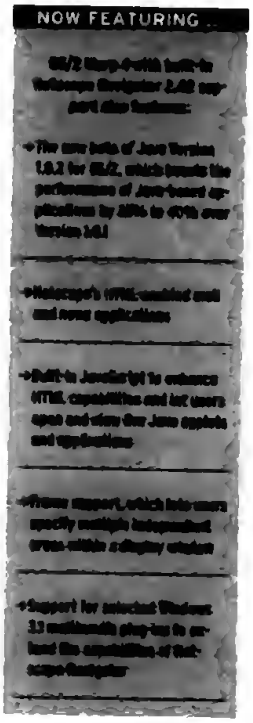
Michael Haun, president of Bell-Haun Systems, Inc., a Westerville, Ohio-based telephone company, said IBM's early and comprehensive support of Netscape and Java will give OS/2 Warp a shot in the arm.

Users and analysts hailed the move, saying that IBM has broadened the scope of Internet content and connectivity currently available to OS/2 Warp users via the Internet.

"The enhancement's great news for us, since we and many of our customers are all using the Netscape Navigator and developing Java-based applications. It will make communications with our customers a lot easier," said Bill Teags, information systems manager at Advanced Package Engineering in Phoenix.

"The documentation is excellent — better than the OS/2 Warp 4 documentation, in fact. And it's robust and easy to use," Teags said.

And because it supports the IBM VoiceType speech-recognition facilities in OS/2 Warp 4, users can tell their PCs to "jump" to an Internet site and navigate by saying the names of links or commands such as "page up," "scroll down" or "back."



BETA SOFTWARE

Netscape makes E-mail high priority in client suite

By Justin Hibbard

E-MAIL TOOK center stage last week as developers saw a preview of Communicator, Netscape Communications Corp.'s forthcoming Internet client suite that includes Navigator 4.0.

But the beta version doesn't implement most of the new features Netscape had previously announced, according to developers.

Of the few new features included, many are related to electronic mail, the application Netscape has targeted as its highest priority in 1997, developers said.

"Most of the advances in it are in messaging and groupware," said Angus Davis, a developer at Intelecom Data Systems, Inc. in East Greenwich, R.I. "Navigator itself hasn't received a lot of attention."

Communicator's beta features tight integration between Messenger, the E-mail client component, and Composer, the Hypertext Markup Language (HTML) authoring component. Users could create HTML pages, including graphics and forms, and send them as E-mail messages, developers said.

Also featured is support for the Lightweight Directory Access Protocol (LDAP), which lets users query LDAP-compliant servers to locate other users, and E-mail filters that automatically direct incoming messages into particular files.

E-MAIL KEY

The emphasis on E-mail in the beta release is consistent with the message Netscape has been delivering since it held its developers conference in October, according to Randy Hancock, director of Gemini Consulting, Inc.'s C4 Labs in Cambridge, Mass.

"Netscape really believes that one of its biggest opportunities in 1997 [lies in] simplifying corporate E-mail systems," Hancock said.

Netscape officials said a public beta was scheduled to be available Dec. 23.

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Mac OS 7.6 due in January

▸ Apple to reveal system software strategy at Macworld this month

By Lisa Picarille

WHILE MACINTOSH users are holding their collective breath waiting for Apple Computer, Inc. to reveal its grand operating system strategy at Macworld Expo Jan. 7-11, the company last week announced an interim Mac OS upgrade that will be delivered in January.

Called Mac OS 7.6, the upgrade is the first in a series of upgrades that the Cupertino, Calif., computer maker promised to ship every six months.

Version 7.6 focuses on delivering enhanced Internet access, improved productivity, more multimedia capabilities and better PC compatibility.

■ **Internet access.** Apple is bundling its Apple Internet Connection Kit (AICK) with Mac OS 7.6. AICK, which helps streamline the process of configuring systems for Internet access, includes the latest version of Cyberdog. Cyberdog 1.2 is Apple's tool suite that works with browsers to manage, sort, file and embed data from World Wide Web sites.

■ **Productivity.** Apple has simplified the process of installing the Mac OS by walking users through four simple steps. A new Extension Manager facility also helps users deal with Macintosh system extensions that often cause system conflicts.

A oew release of Open Transport, Apple's networking architecture, is also built in to Mac OS 7.6. Open Transport 1.1.1 lets users support multiple network configurations when rebooting. Apple's Remote Access software is also included to simplify the process of logging in to a network or intranet via a modem.

Also, Mac OS 7.6 supports printing using the LaserWriter 8. That means users can drag-and-drop print jobs oo their desktop and switch printers without having to go in to the Chooser to reconfigure settings.

Users who plan to upgrade to Version 7.6 oo their PowerPC machines will have built-in OpenDoc support. That means users can drop OpenDoc components, also called LiveObjects components, into applications that are OpenDoc-aware.

"All this effort has gone into [Mac OS] 7.6 and incorporating technologies from Copland, but what users are really waiting for is the overall strategy."

– WILLIAM ZACHMANN, CANOPUS RESEARCH

■ **Multimedia.** Apple has built in its QuickTime Media Layer (QTML), a container that supports various media types across the Macintosh and Windows platforms. QTML lets users author and play back multimedia presentations. The latest versions of QuickTime and QuickDraw are included in Mac OS 7.6.

■ **PC compatibility.** Apple is trying to deliver on its promise to make the Macintosh work better with PCs. To that end, Mac OS 7.6 includes new versions of PC Exchange, Mac Easy Open and MacLink Plus. Io combination, they let users open Windows 95, Windows 3.1 and DOS disks from the Macintosh desktop and provide translators to convert and view the files.

Industry watchers said Apple's decision to announce and deliver Mac OS 7.6 prior to revealing its long-term Mac OS plans and how Be, Inc.'s BeOS fits in to the Mac OS picture could further confuse users.

"On the one hand, all this effort has gone into 7.6 and incorporating technologies from Copland [the next-generation Mac OS, which has been scrapped], but what users are really waiting for is the overall strategy and how everything fits together," said William Zachmann, president of Canopus Research, a market research firm in Duxbury, Mass.

USERS REACT

Some users said they found the Mac OS news a bit puzzling, but one Macintosh user said he is taking things in stride.

"I don't think it's that big a deal," said Russ Chapman, director of Information Solutions at Jack Morton Productions, Inc., a Boston company with more than 200 Macintoshes that specializes in corporate training materials. "I'm more pragmatic. It's great that Apple is shifting toward a modern [operating system], but in the meantime, I still have everyday users. And until something major happens with the [operating system], I will just keep rolling out the upgrades every six months."

FOUR-PART HARMONY

Apple's Mac OS 7.6 release will focus on four areas

Internet access
- Built-in Apple Internet Connection Kit and Cyberdog 1.2

Productivity
- New Installer
- Built-in Open Transport 1.1.1
- Built-in Apple Remote Access 2.1
- Drag-and-drop printing for LaserWriter 8.4.2
- OpenDoc 1.1.2 support (PowerPC machines only)

Multimedia
- Built-in QuickTime Media Layer
- QuickTime 2.5
- QuickDraw GX 1.1.5

PC compatibility
- New versions of MacLink Plus 8.1, Easy Open 8.1, and PC Exchange 2.1.1

Users at NASA's Johnson Space Center battle to keep their Macintoshes. Page 77

Court rules against Feds on encryption

▸ Decision nips at White House policies, backs free speech rights

By Gary H. Anthes

OPPONENTS OF THE Clinton administration's restrictions on the export of encryption software cheered a court ruling last week that said some of the restrictions are unconstitutional.

But legal observers said the ruling was narrow in scope and didn't signal the imminent collapse of the controversial White House policies.

ENCRYPTION POLICIES

U.S. District Judge Marilyn Hall Patel in San Francisco ruled in favor of Daniel Bernstein, a mathematics professor at the University of Illinois, who in 1993 was barred by the State Department from posting on the 'net an encryption program he had written. She said the ban violated Bernstein's free speech rights.

"I think the ruling is pretty important," said Tom Steding, president of Pretty Good Privacy, Inc. in San Mateo, Calif. "It's certainly our expectation that [the administration] positioo will collapse over time of its own weight, and this is perhaps a good beginning to that."

NARROW VICTORY

Don't hold your breath, advised Michael Hintze, an attorney at Washington-based Steptoe & Johnson LLP. "The victory under even the most rose-colored lens is pretty narrow," he said. "But it's a moral victory for privacy advocates."

Hintze said the ruling dealt with speech rights in the academic community. Those rights in the commercial world have a lower level of protection, he said.

Hintze also said the ruling turned on procedural issues that the government would be able to work around in the future. "This is not likely to be the first in a series of court victories," he said.

The White House wants to restrict the use of strong encryption overseas because it fears it will be used to hide the activities of criminals and terrorists. But most commercial interests argue that the ban just leaves them exposed overseas and hands over encryption product sales to foreign companies.

Last week, the Business Software Alliance (BSA) in Washingtoo sent a scathing letter to Vice President Al Gore about the latest export proposals, which the White House circulated in early December.

The BSA wrote: "The proposed regulation confirms our worst fears. . . . [It] is so bad that we will not offer detailed comments because, quite simply, there is no way to repair it."

The BSA also said, "The regulations are not voluntary, market-driven or practical," as the Clinton administratioo had promised.

Bay scoops up NetICs

By Bob Wallace

BAY NETWORKS, INC. last week snapped up start-up NetICs, Inc., and Newbridge Networks, Inc. announced plans to acquire UB Networks, Inc.

Bay customers will benefit from lower-cost LAN switches that support 10M and 100M bit/sec. Ethernet, and Newbridge users will be able to buy WAN switches, hubs and LAN switches from the Kanata, Ontario, networking firm.

Bay in Santa Clara, Calif., says its $99 million purchase of the Acton, Mass.-based NetICs will let it offer a $250-per-port 10M and 100M bit/sec. switch in the first quarter of 1997. Bay will use application-specific integrated circuits (ASIC), developed by NetICs, that will serve as the brains of the switch.

These switches will allow Ethernet users to run their networks at 10M bit/sec. and move up to 100M bit/sec. without having to change the switching system. Users need only install Fast Ethernet adapters in their PCs.

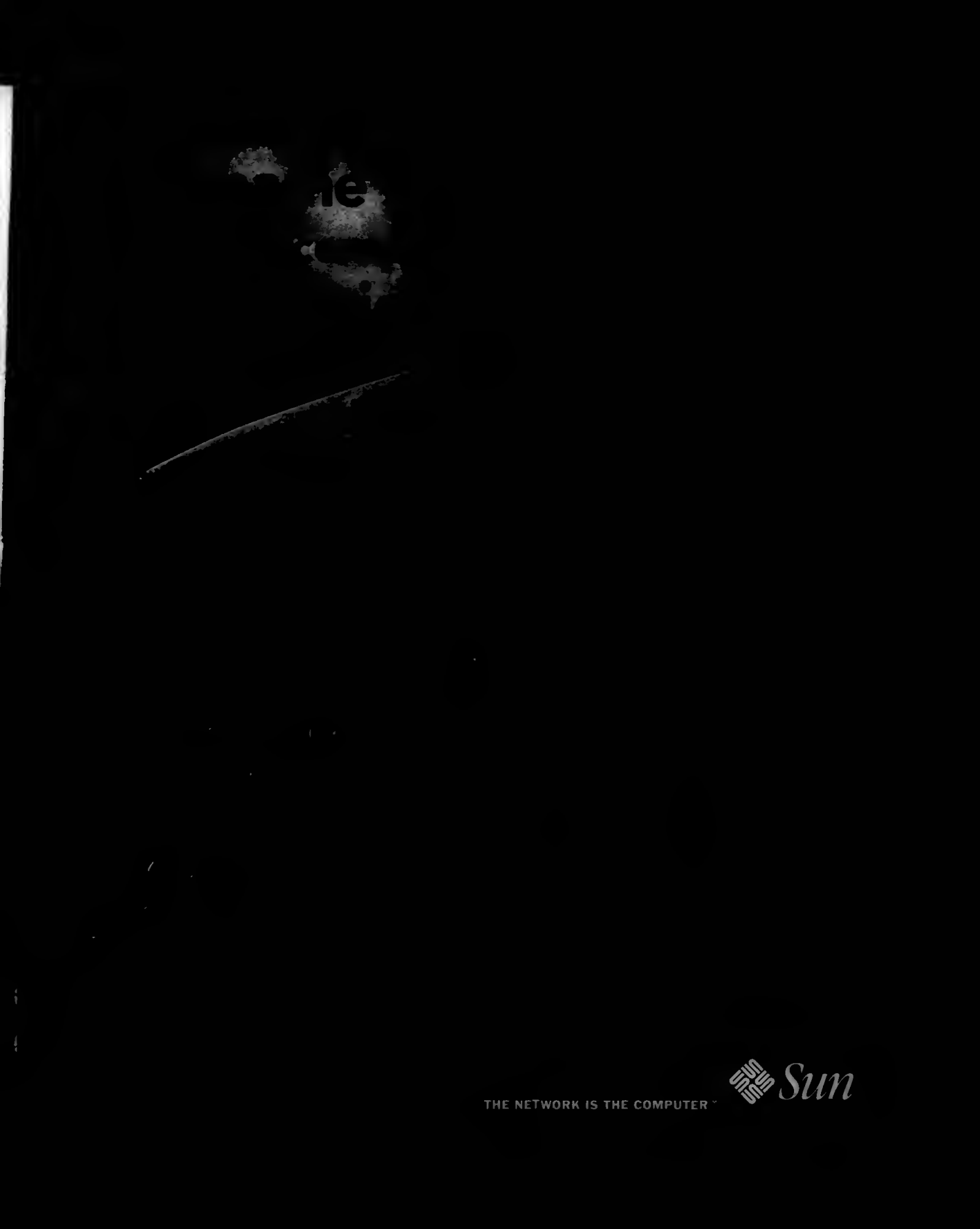
That gives users a tenfold bandwidth boost.

Bay also plans a card based on the ASIC that supports 10M and 100M bit/sec. switching for its high-end System 5000 hub, but the company hasn't announced a release date.

Bay's existing 28115 switch costs about $600 per port.

"That's a pretty substantial drop in price — one that will put Bay in front of users who want the switching headroom that 10/100 switches offer," said John Morency, a principal at The Registry, Inc., a Newton, Mass. consulting and research firm.

The Newbridge move comes as no surprise; UB parent company Tandem Computers, Inc. in Cupertino, Calif., put its internetworking company on the block months ago. Newbridge signed a letter of intent to buy UB, but terms of the deal weren't disclosed.



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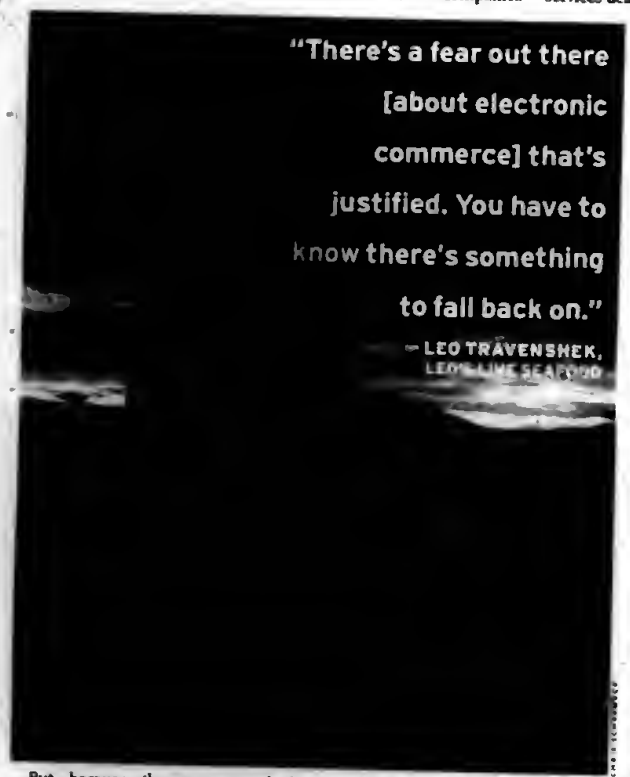
Sun

Money laws lacking

CONTINUED FROM PAGE 1

ones and zeros.

These days, everyone from financial start-ups such as 2-year-old CyberCash, Inc. in Reston, Va., to banking veterans Wells Fargo Bank and The Chase Manhattan Bank Corp. is turning out products (see story at right).


"There's a fear out there [about electronic commerce] that's justified. You have to know there's something to fall back on."
— LEO TRAVENSHEK,

But because the payment methods are so new, even enthusiastic online merchants worry about the legalities.

"I can't afford to have a major blow. You have to know there's something to fall back on," said Leo Travenshek, owner of Leo's Live Seafood in Lummi Island, Wash.

And that something is the law, Travenshek and other electronic merchants hope. Yet the federal government so far has stayed away from writing rules specifically to govern electronic money.

TRACING THE DEALS

Audit trails is one area that the federal government is clear about wanting to regulate, however. No matter what the method of digital payment, the feds want to be able to trace funds in some way in order to guard against online money laundering.

Overall, Uncle Sam's hands-off stance isn't necessarily bad news for an emerging technology, experts said. But the situation has left people wondering what laws and banking regulations apply to electronic cash.

Furthermore, companies looking to sell products and services on the World Wide Web often don't know the risks they bear when they sign contracts with suppliers of digital money, according to several online merchants, lawyers and analysts.

"Checks, credit cards, etc. — they're regulated. But beyond that, it's something of a free-for-all," said Tom Smedinghoff, a lawyer at McBride Baker & Coles in Chicago.

Surfers are buying bigger, according to a recent survey of 15,000 Web users by the Georgia Institute of Technology in Atlanta. A majority of online purchases now exceed $50, the survey said. The percentage of purchases totaling less than $10 has declined from 28% in 1995 to 26% in 1996.

For example, anyone can invent his own online currency, which people can decide to use or not use. But for risk-takers who adopt it, it isn't clear what legal recourse there will be should Bob's BigBucks go under, Smedinghoff said.

REGULATIONS VARY

In general, online money suppliers have to comply with banking laws at the point where their services deal with banks. For example, if a shopper starts a CyberCash CyberCoin account at a bank, his money is insured when it sits inside the bank, just as other funds are protected by the Federal Deposit Insurance Corp.

But there are no widely accepted regulations for, say, the maximum fees companies such as CyberCash can charge or what information consumers or merchants must reveal to open accounts.

Many merchants, meanwhile, are small-business owners with little technology know-how. They often put their faith in software products, rather than the law, to protect them.

Sandra Bauer, a marketing assistant at Dreisbach's Steaks, Inc. in Grand Island, Neb., said she initially had concerns about the safety of CyberCash.

"But when they called on me, they also came with our banker from Norwest [Corp.], who was very enthusiastic about it," Bauer said. "This set any fears we had to rest."

Karen Epper, an analyst at Forrester Research, Inc. in Cambridge, Mass., said electronic commerce companies should do more legal research than that.

"Joe Programmer could create a new currency system," Epper said. "But if it's not supported by regulators, what do you have?"

Indeed, Amsterdam-based Digicash B.V. is in just such a precarious position, Epper said. So far, only one bank offers Digicash's Ecash: Mark Twain Bank in St. Louis (see chart).

Daniel M. Eldridge, vice president of Ecash business development at Digicash's New York office, acknowledged that there could be a problem.

"If Mark Twain goes out of business, the Ecash could be worthless if no other bank is there to accept it or wants to accept it," Eldridge said. But Digicash is working to sign up other banks, including Germany's Deutchebank, he said.

The safest bet is to look for electronic payment firms backed by veteran banks, analysts said.

Smart card vendor Mondex USA, for example, is no sure thing. But it is run by seven of the largest banks and credit-card companies in the U.S., Epper said. "These financial institutes will watch their P's and Q's," he said.

Although the federal government hasn't rushed to regulate electronic money, the Federal Reserve Board is deciding whether to apply its complex Regulation E to at least some online payments, starting with smart cards. Regulation E oversees the electronic movement of money. Automated teller machine transactions fall under Regulation E, for example.

Some states, such as Illinois and New Hampshire, are devising policies on their own.

Yet when regulations aren't spelled out, matters often get decided in court — a slow, piecemeal process, Smedinghoff said. That's what is now happening with trademark disputes over Web domain names.

Although no one wants stifling interference from the government, some clear statements from lawmakers might help spur electronic commerce, said Stan Wilson, general manager of Iconomics, Inc., a graphic design company in Fort Collins, Colo.

"It would make some people feel better about trusting these new ways to pay," Wilson said.

The state of Utah starts doing business with citizens via the Web. Page 75

Payment options proliferate

Electronic payment methods are proliferating on the Web — a trend that is likely to accelerate in 1997. What follows is a sampling of companies growing the first crop of digital dollars:

- **Digicash created Ecash, a digital form of dollars and cents that consumers can use to pay merchants directly online (www.digicash.com).**
- **CyberCash offers CyberCoins, which are essentially electronic promissory notes that can be redeemed at certain banks. No banks offer CyberCoins yet, but several are expected to launch programs early next year, including First Union Corp. in Charlotte, N.C., and U.S. Bank in Portland, Ore. CyberCash also offers an encryption service to guard credit-card numbers transmitted online (www.cybercash.com).**
- **Mondex is a joint venture of The Chase Manhattan Bank, AT&T Corp., Wells Fargo Bank and four other big banks and credit-card companies to push smart cards. People who use the cards, which hold a preprogrammed amount of value, can pay for items online by sending encoded numbers or, in the real world, by swiping them through card readers.**
- **First Virtual Holdings, Inc. in San Diego uses electronic mail and secret personal identification numbers to transmit payments online (www.fv.com). — Kim S. Nash**

CYBERBANKRUPTCY

Changes for CyberCash CyberCoin accounts vary from bank to bank, and Digicash is available through only the Mark Twain Bank

Digicash's Ecash	
Initial account setup fee	$11 or $25
Monthly fee	$1, $2 or $5
Fee to move money from traditional account to Ecash account	$1, $2 or $3
Fee to convert Ecash to real cash	4%, 4.5% or 5%

Source: Mark Twain Bank, St. Louis

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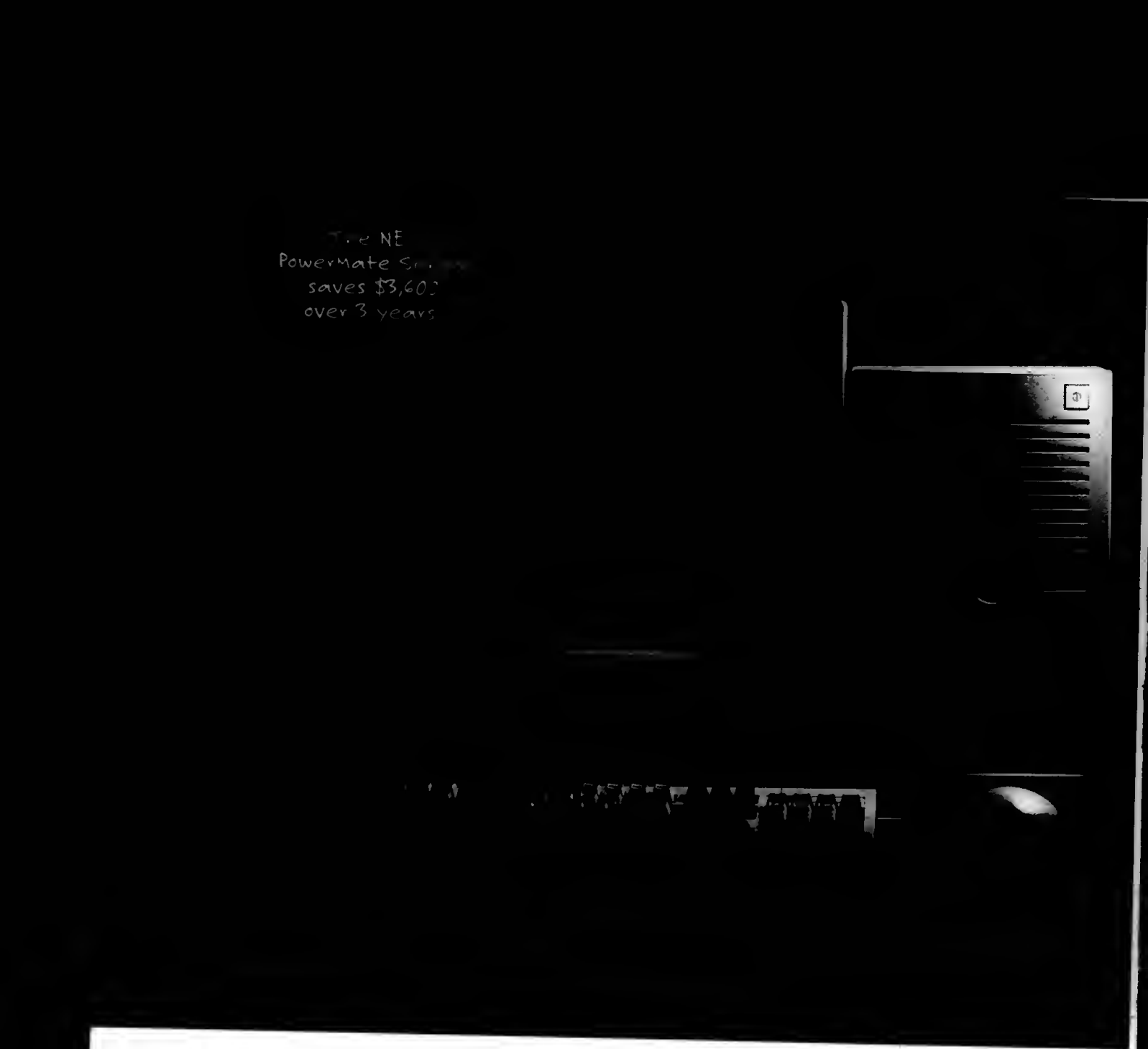

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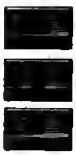

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50 Business Service (except DP)
60 Government: State/Federal/Local
65 Communications Systems/Public Utilities/ Transportation
70 Mining/Construction/Petroleum/Refining/Agric
80 Manufacturer of Computers, Computer-Related Systems or Peripherals
85 Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90 Computer/Peripheral Dealer/Dist./ Reseller
99 Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

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15 Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21 Dir./Mgr. MIS Services, Information Center
22 Dir./Mgr. Network Sys. Data/Tele. Comm. LAN Mgr. /PC Mgr. Tech. Planning, Admin. Sys.
23 Dir./Mgr. Sys. Development, Sys. Architecture
31 Programming Management, Software Developers
41 Engineering, Scientific R&D Tech. Mgt.
60 Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11 President, Owner/Partner, General Mgr.
12 Vice President, Asst. VP
13 Treasurer/ Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51 Sales & Mktg. Management
70 Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80 Information Centers/Librarian, Educators, Journalists, Students
00 Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
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NC vs. PC

"Tea, Earl Grey, hot."

Whenever Capt. Jean-Luc Picard of the starship *Enterprise* spoke those words to the replicator, a steaming cup would appear like magic. Or rather, like science fiction, *Star Trek*-style. Talk about the ultimate example of a network computer: a simple client device that relies on a powerful network to deliver exactly what the user ordered.

OK, Paul, I know what you're thinking: What's a TV series got to do with real life on today's congested networks? Who would dare to wrest those overweight desktops from the clenched fingers of PC "power users?" Right?

Well, wake up, fella. I'd wager that 80% of the business users out there feel more like *powerless* users — stymied in their work by buggy, bloated software and complex systems that crash for mysterious tech-wienie reasons.

Even more important, the PC's $12,000 annual cost-of-ownership has become quite a choke point for IS executives. They're eyeing the potential cost savings associated with the network computer with understandably keen interest. The network computer will be a hit for two reasons: Simplicity sells, and money talks.

Another refreshing aspect of the network computer is that it isn't just another set of vague vendor intentions. It's a device defined by a concrete set of standards and specifications already agreed upon by major players such as Sun, Oracle, IBM, Apple and Netscape (see page 41).

Walking hand-in-hand with the network computer is Sun's Java language, with its write-once-run-anywhere allure for software developers. And I wouldn't get in a tizzy about Java's slow performance and security glitches. Those are fixable problems. Network reliability and bandwidth inadequacies do pose more serious stumbling blocks for many users. But I'm optimistic about that changing as companies move from antiquated, proprietary PC LAN technology to robust, Internet-style TCP/IP networks.

Will network computers replace legions of PCs? Unlikely. Will they be a viable alternative to dumb terminals and low-end PCs? You bet.

Network computers, Java and the Internet are as surely a part of our future as Microsoft, Intel and PC LANs are becoming the legacy past.

Maybe it's not so far-fetched after all to think that some futuristic version of a network computer will be a device like Capt. Picard's replicator. And I'll take milk in my Earl Grey tea, thanks.

MARYFRAN JOHNSON, EXECUTIVE EDITOR (MARYFRAN_JOHNSON@CW.COM)

...not Earl Grey tea you're drinking. That's Scott McNealy's Java Kool-Aid, ...taken in by the latest fad. Remember personal digital assistants? Computer-...software engineering? Two-tiered client/server? OS/2? All were technol-...ised to live up to their potential because they couldn't deliver on lofty ...network computer will be no different.

...got me wrong. The idea behind network computers is good. Everyone ... are too darned expensive. But is taking them away in favor of some ... terminal the right answer? No, because:

...network bandwidth just isn't there. 10M bit/sec. Ethernet won't support multi-...and users loading and saving files and applications simultaneously. And all this on ...the public Internet? Forget it.

■Speaking of slow, how about Java? Or is molasses a better name? If you plan to run all your apps in interpreted mode in a virtual machine, be ready to drink *something*. You'll certainly have time to kill.

■What operating system is this sucker going to run? If the network computer backers hold true to their Unix heritage, users will have a whole bunch of incompatible, thinly supported operating systems to choose from.

■Network computers may not save as much money as you folks in the rooting section claim. That $2,500-per-year cost-of-ownership number looks a wee bit optimistic from over here. After all, network computers are no cheaper than low-end PCs initially, and IS staffs will have to expand along with users' support needs.

Which brings me to the big issue of choice. The PC phenomenon happened because users took computing into their own hands. Sure, there were support and administration problems, but the business benefits more than compensated for the headaches. Network computers make IS departments a bureaucratic bottleneck again. Yes, a few service-oriented IS departments may change themselves into rapid-response facilitators. But you and I know that most are struggling just to keep afloat. An IS department can't solve a user's problem as fast as the user can. So why try?

Network computers could become a messy, protracted and unwinnable battle between IS departments and users. If you want to push vendors to address the cost-of-ownership problem, be my guest. But don't take users' PCs away. That genie's out of the bottle, and it isn't going back in.

PAUL GILLIN, EDITOR (PAUL_GILLIN@CW.COM)

JACK FOLEY

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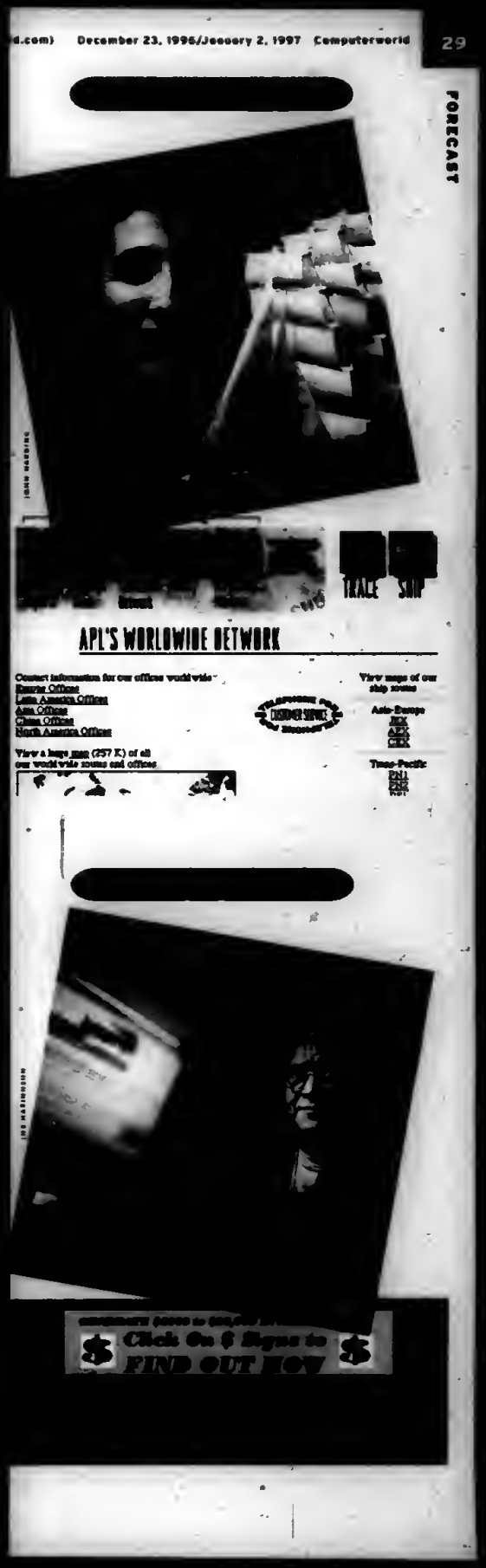
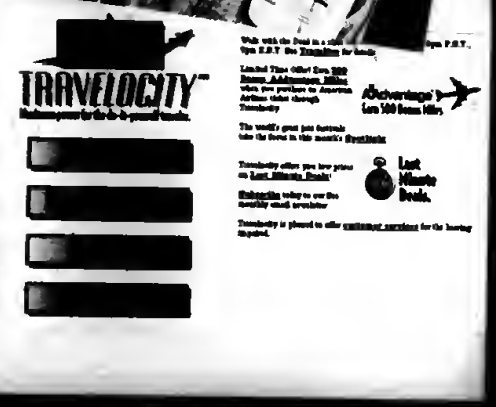


FORECAST



Melrose Place: A tangled Web indeed

Travelocity takes off

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The browser war

There will be a lull in the battle in 1997, but don't expect a love-in between Netscape and Microsoft. They're just shifting troops to the server front. Fortunately, smart IS groups can emerge the real victors.

Let's dispose of a few notions right up front.

Yes, 1996 was the 12-month browser war. No, in 1997 Netscape Communications Corp. and Microsoft Corp. will continue to lob quarterly grenades in the form of new Navigators and Internet Explorers, respectively.

Netscape currently commands most of the browser market, but that won't last. Microsoft has built too many good features into Internet Explorer 3.0, and its price — nada — can't be beat. Even Netscape knows it.

But this war hasn't produced a winner, nor will it. When the fascination with browsers ends (this has already begun), Microsoft and Netscape each will own a big chunk of the market. Yet IS information systems departments do their best imitation of Switzerland and stay neutral, they can benefit from the battle.

Explorer and Navigator are so similar, and the development duel is moving so fast, any advantage one product has will be erased by the next rival release.

The browser shouldn't make a difference. That's the point of browsers," says Stuart Greenfield, an analyst at the Texas Comptroller of Public Accounts in Austin.

But browser flux — caused by new products that ship every three to six months and user demands that change just as rapidly — means that the browser does, in fact, make a difference. At least temporarily.

For example, Netscape and Microsoft each have created extensions to Hypertext Markup Language (HTML) that aren't part of the specification sanctioned by the World Wide Web Consortium. Some of those extensions don't work together.

Right now, all this is a lot of headache," says an intranet administrator at a major retailer in the war. He says he's been backed up to a corner by the fighting between Microsoft and Netscape.

But many IS managers are willing to bear temporary pain for the potential long-term gain they may get in the form of sophisticated Web software.

Microsoft and Netscape each wants to be "the" supplier of both the interface and the server software. The browser war therefore will become the server war, and we'll do it all over again in '97," says Dave Garaffa, editor of BrowserWatch (browserwatch.iworld.com), a Web site that tracks the nuances of the day-to-day battle. There's been high entertainment value in the browser war," Garaffa says.

Yet browsers are not important anymore. It is the applications that you browse," says Walid Mougayar, president of CyberManagement Inc., a Toronto-based Web consulting firm.

Indeed, the distribution of stand-alone browsers won't be as big an obsession for either Microsoft or Netscape in the coming year, because both vendors plan to meld their browsers into other applications.

Netscape is expected to roll out its Communicator line of end-user products in early 1997, and the forthcoming Navigator 4.0 browser is just one piece of it. Communicator includes lots of applications, such as groupware and electronic-mail packages. Microsoft, meanwhile, plans to meld Internet Explorer into the Windows interface with Internet Explorer 4.0, which is also due in early 1997.

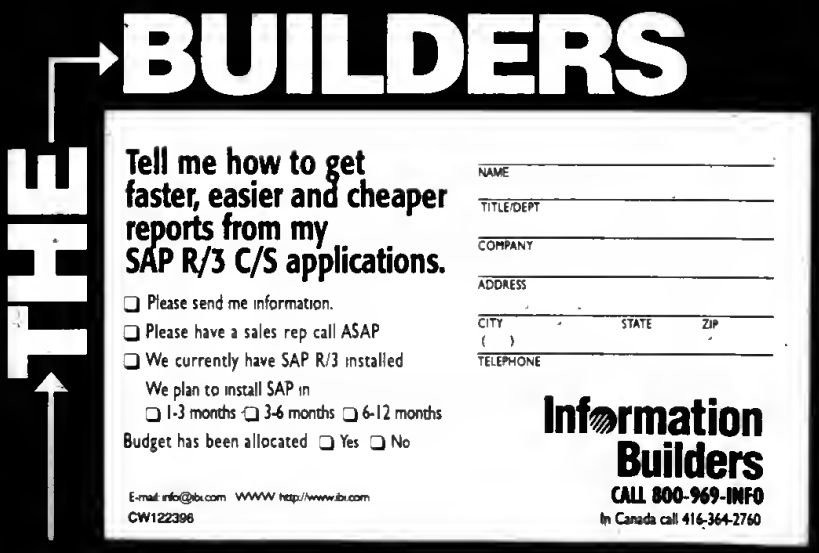
If neither Microsoft nor Netscape can be called king, IS at least can claim some spoils from this war.

The optimist's argument goes like this: When Netscape came bounding onto the industry, Microsoft had to respond or risk losing business. Without the fierce-than-fierce competition between the two, IS wouldn't have a Web suitable for business applications. No commercial Web servers. No low-cost graphical Web browsers.

The rivalry has produced cheap products whose use of Internet protocols means they can interoperate. Suffering a few HTML incompatibilities is better than the clashes that could have happened, optimists say.

And rapid-fire browser releases have changed the way some IS managers think about buying end-user software. Bulk buys for all the desktops at a given firm may recede, says David Belsky, a senior technical analyst at Chubb & Son Inc., an insurance company in Warren, N.J.

Browser updates every six months let IS re-evaluate rival products to be sure the best one is chosen, Belsky says. Think of it as a just-in-time approach to desktop applications. You don't buy thousands of copies of anything anymore. Just a hundred here or there as needed," Belsky says.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Site

By Leslie

Effecti IS Web sites are a very ineffe eb site is in its o way.

for inform ms professio expec d and yiel ormation. The co cused for IS s consistent point o ritten — never condescending, pedantic or dull. The sites are of value to managers and staff members, and cut across all IS functions.

The worst sites are singular in their failures. One promising site shoots itself in the foot with poor performance and awkward organizatiou. And a promineut vendor's site services the company more than the customer.

We've reviewed some of these sites before; some we haveu't. Optimize your limited surfing time with our handy list of the best and worst IS sites for 1997.

A Business Researcher's Interests

www.brint.com/interest.html

Many Web sites try to serve this one's stated purpose to be a single resource for information technology and business information. But the Business Researcher's Interests page offers the most compelling — and frequently surprising — links.

Sections of the site are thorough enough to deserve their own bookmarks. The IS Professional Career Page, for instance, jumps to salary surveys, tips for IS interviews and resumes, occupational outlook data and other content to suit everyone from a junior programmer to a chief information officer.

The site also anticipates day-to-day corporate work hassles and anxieties by including links that aren't IS-related but could be useful to IS pros in specific business situations.

For instance, a link to worldwide TV listings might be reassuring to an armchair business traveler or an applications developer about to relocate.

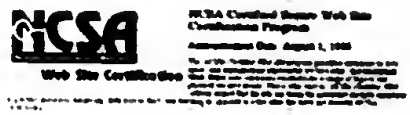
Even a hodgepodge section of links that cover government, investment, travel and leisure holds its own. Click on it at the end of a long day online for some pleasant diversions. Surf to the Movie Link site to find a flick playing in your neighborhood, or just kill those last few minutes at the office by checking out the Indy 500, the Vatican Exhibit or Hubble Space Telescope photographs of Pluto.

For its breadth and depth, but especially for its relevance to the multifaceted needs and concerns of IS professionals, A Business Researcher's Interests is an effective tool for 1997.

National Computer Security Association

The National Computer Security Association's (NCSA) site plays the role of computer security advocate enthusiastically. Even IS professionals who have avoided tackling the security issue will want to spend time here.

Every computer security topic is covered in depth by a staff that can talk the talk as well as it walks the walk. Rather than create panic, NCSA workers write sincerely, energetically and clearly. They preach only occasionally. The site not only yields significant, informative reports and papers, but it also imparts guidelines for Web site and firewall certification and step-by-step advice about dealing with viruses, firewalls, user authentication and other security risks.



Particularly valuable is a list of computer security alerts and links to Computer Emergency Alert Teams worldwide. The site even makes independent vendor recommendations, and it links to those whose security products have been certified in the NCSA's labs. It also reviews specific products in detail.

With the projected growth of Internet commerce and intranet use, every IS professional, from network manager to end-user support technician, soon will need to be well-grounded in security risks. For tirelessly leading the charge, the NCSA Web site is among the best for 1997.

The Sledgehammer

Some days, you need a reminder not to take this business too seriously. The Sledgehammer page narrowly beat out the I Hate Computers page (extlab1.entnem.ufl.edu/IH8PCs/index.html) as our humor entry.

The Sledgehammer is written from a down-in-the-trenches, hunched-over-my-monitor point of view. It captures the spirit of workaday IS staffers, the underappreciated ranks of systems administrators, programmer/analysts and help desk technicians.

Conceived and maintained by a contract programmer in Redmond, Wash., it is occasionally cutesy (he has names for each of the PCs on his home-office LAN) but saves itself with sardonic advice on topics

site

By Leslie

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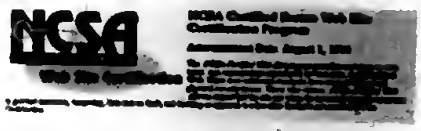

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seeing

[redacted]

such as the best way to handle what the programmer calls "lusers." (He recommends having a small, concealed LART, or Luser Attitude Readjustment Tool, available at all times. His preferred LART is, of course, a sledgehammer.)

Past columns reveal that the writer takes great pleasure in dissing local behemoth Microsoft Corp. But in a recent twist of fate, he is working for the company via a contract gig. In an October column, he advised, "Next time you have Windows 95 problems, be wary of calling tech support. I could be the guy on the other end."

ISWorldNet

[redacted]

Despite its pertinent content and the sincerity of its sponsors — a consortium of IS professional and academic organizations — this site is doomed by performance problems. It isn't just sluggish; it's a slug.

The irony is that although the site is full of valuable information, finding it will test your patience. Even if you can overcome the pace with a dedicated T1 line, getting to actual content typically requires at least a hop, a skip and a jump.

For instance, clicking on a link to Decision Support Systems Research from the What's New page (which in mid-December hadn't been updated since early September) led to a page of links to various types of decision-support systems (DSS) research.

There, clicking on DSS Books finally led to content: an index of titles. Three clicks to get content may not seem so bad, but because each link jumps to a different server and the site has performance issues to begin with, wait times multiply.

Mustering the patience to follow the series of links generally pays off. But sometimes the content is too ivory-tower academic to be relevant to corporate IS professionals. That could be forgiven, but after clicking and waiting and clicking and waiting, you deserve guaranteed payback.

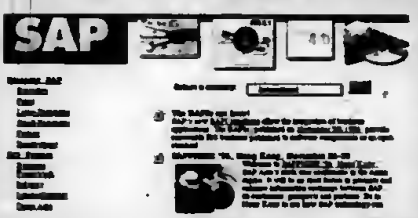
Because it fails to overcome a technical problem that is particularly irritating to its target audience, this promising site is ultimately among the worst for IS professionals.

SAP AG

[redacted]

SAP's R/3 suite of integrated client/server business applications has captured the imaginations of senior executives across all industries and has sent IS organizations scurrying to acquire and build the expertise they need to implement and maintain the software. But there's little help at this Web site, which favors information control over information dissemination.

Like SAP's overall sales strategy, this site was designed more for the CEO than for the people who deal with the daily challenges of an R/3 project.



The company offers plenty of material on R/3 and R/4 migrations, but the generous use of adverbs and superlatives quashes the credibility of the content. Astute IS researchers will smirk at claims such as, "R/3 Internet Applications Components can easily be tailored to a company's exact requirements."

If R/3 implementation is so easy, why is IS spending so much on expensive consultants?

Real-world case studies, guides to consultants and training, and technical documentation are all lacking at the site. A handful of "Success Stories," featuring companies such as Boston Beer, are no more than cheerleading.

Perhaps the most aggravating element of the site is its self-containment. It leverages the Web's hypertext capabilities merely to keep users forever circling through its pages. And it offers few links to third-party material.

Because it scoffs at the overwhelming appetite of IS professionals for more information on a critical product, SAP's Web site ranks among the worst IS resources for 1997.

GOFF IS A FREELANCE WRITER IN NEW YORK.

shakeout

By Randy Weston

1996 may go down in history as the year of the Internet, but 1997 is likely to see the end of the Internet service provider — at least as we know it.

Analysts predict that the service provider industry is entering a season of mergers, buyouts and shutdowns as providers scramble for capital to survive.

"Darwin is alive and well," says Joel Maloff, president of The Maloff Co., an Internet consultancy in Dexter, Mich. "The real problem with [Internet service providers] is that they can't compete now that the industry has evolved into a real business."

Consumer and corporate customers are growing more sophisticated and are demanding service guarantees from their service providers, Maloff says. That's a request many small providers can't offer. "I, as a customer, want to know I can access mail at any time without problem," he says.

Maloff predicts that telecommunications companies that seek an established customer base for their Internet services are likely to buy up the smaller Internet providers.

UUnet Technologies, Inc., a major player in establishing the national network's infrastructure and one of the first service providers, found such a buyer in 1996. The Herndon, Va., company merged with business telecommunications giant MFS Communications Co., which was subsequently bought by LDDS WorldCom, Inc.

ILLUSTRATIONS BY CALEB BROWN

Going to ground

Analysts say the UUnet/MFS merger was just the beginning. UUnet competitors PSINet, Inc. and Netcom On-Line Communications Services, Inc. saw their stock prices skyrocket in the wake of the UUnet deal as investors anticipated more mergers.

"There are about 2,500 [Internet service providers] out there today," says Tom L. Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "Of those, 2,000 are going to sink — mainly the small regional guys. Three hundred or 400 will be acquired, and the rest will stay independent."

The Yankee Group, a consultancy in Boston, predicts that by 1999, only 60 service providers will remain.

Service providers that want to survive and stay independent must find benefactors with deep pockets and a willingness to invest in expensive upgrades.

"A lot of [Internet service providers] that were the darlings of venture capital companies can't get financing now," Nolle says. "Businesspeople are now looking at the bottom line and saying, 'These guys can't make money.'"

Income is lagging because the business model that applied to Internet service providers in their early days no longer holds true. Setting up a provider was once cheap and easy, but it's becoming increasingly expensive as more people sign on and drive up the need for faster equipment.

Nolle says part of the evolution occurred when large firms such as AT&T Corp. offered unlimited access for a flat, relatively inexpensive monthly rate. That forced smaller companies to follow suit.

That worked in the beginning, gathering customers for the local providers. But it's starting to backfire as more people sign up and stay online longer, overtaxing the cheap and simple networks that start-up service providers use. Without capital to expand and update their systems, many providers are collapsing as users search for faster and better services for even less money, Nolle says.

The Internet service provider question is no longer just a matter of big vs. small; a "none of the above" option has recently emerged and bears watching in 1997. Some businesses find it cheaper to cut out the middleman and run their own direct connection to the Internet.

C. R. Bard, Inc., a Murray Hill, N.J.-based manufacturer of medical equipment, just dropped its midsize service provider. Paul Maszczak, corporate director of information technology at C. R. Bard, says his company will go it alone as it prepares to provide access to about 2,000 employees. "We were very happy with our [provider] until we reached a size where, price-wise, it was cheaper to run it ourself," Maszczak says.

Bottom-down line

Telecommunications equipment maker Siemens Business Communications Systems, Inc. runs its own T1 connection directly to the Internet for employee access. "We were using a mom-and-pop shop located down the street," says Bill Makley, internal communications manager at the German company's Santa Clara, Calif., U.S. headquarters. "While the price was good, the service wasn't. What it came down to was, we need 7-by-24 availability."

Don't look for many buyouts of the regional service providers by larger national or international service providers, Nolle says the smaller providers don't have sturdy enough networks to survive in any case. "[Internet service providers] grew unplanned," he says. "If most of them could do their networks over again, they'd likely do them differently. The problem is they didn't know what they would end up with when they started."

Thus, the same factors that made Internet service providers profitable ventures a year ago may be their undoing in 1997.

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FORECAST

LANGUAGE BARRIERS

In 1997, Java and ActiveX will slug it out for corporate dominance

By Stephen Cicchese and Penni Hayes

If 1997 holds a single battle for the hearts and minds of corporate software developers, it will be the one between ActiveX and Java.

Java, Sun Microsystems, Inc.'s cross-platform Internet language, struck the industry like a bombshell in 1996, shattering Microsoft Corp.'s stranglehold on developers and their projects. But Microsoft quickly loaded its own guns and fired back. It redesigned its Object Linking and Embedding component system to run on the Internet and renamed it ActiveX.

The smoke has yet to clear over this battle for market share and mind share. It's commonly noted that there are 50,000 Java developers, but that number may be a little dummy, says John R. Rymer, vice president at Giga Information Group in Cambridge, Mass. He says there are probably more than 500,000 ActiveX users.

Now both vendors are moving to develop their technologies to keep pace with the explosive growth of the Internet and the needs of corporate developers.

ODDS FOR THE DOMAIN

ActiveX is a powerful software component architecture that takes full advantage of the Windows environment — but no others. Sun CEO Scott McNealy has derisively labeled the technology "CaptiveX," a slap at Microsoft and its proprietary approach to software.

But ActiveX is on the verge of creating the border onto other platforms, says Octavius Wil- [illegible] group product manager at Microsoft's In- [illegible] Development division.

"ActiveX — definitely going cross-platform," Willis says. "To be a viable technology for the Internet, we need to be able to support [illegible] forms than [illegible] Windows. You don't want [illegible] of platforms will end."

[illegible] says ActiveX [illegible] will be able to [illegible] and Unix [illegible] by the end of the [illegible] of 1997. [illegible] the [illegible] testing in October 1996.

"The cross-platform piece means a lot to us," says Lyle Speirs, president of Black Diamond Consulting, Inc. in Portsmouth, N.H. Black Diamond hopes to port its Windows-based visualization system to the Macintosh with the new tools. "We want to make sure our developers are not inhibited," he says.

Karen Boucher, an analyst at The Standish Group International, Inc. in Dennis, Mass., says Microsoft's cross-platform push for ActiveX actually has little to do with ActiveX components.

Instead, it's really all about Microsoft's architecture for creating object-oriented distributed applications: the Distributed Component [illegible]

ject Model (DCOM). "I don't think they give a damn about ActiveX." Boucher says. ActiveX is the connection to DCOM, and that's what they really care about. DCOM, which is built in to Windows NT 4.0, serves as the central switchboard for ActiveX components to communicate on a network.

Boucher says ActiveX and DCOM were designed to work together, much as Java was designed to work with the Object Management Group's Common Object Request Broker Architecture (CORBA), a popular rival to DCOM sponsored by IBM, Hewlett-Packard Co., Sun and other systems vendors.

Microsoft's theory is that bringing more corporate developers to the ActiveX arena will increase the chances that they'll adopt DCOM — and NT — for their enterprise networks.

About 24% of corporate information systems shops have adopted Microsoft's object strategy, 14% have gone with CORBA and more than half haven't chosen either yet, according to a recent survey of 30 user companies by Forrester Research, Inc. in Cambridge, Mass.

"A product like CORBA or DCOM is your base infrastructure for your company," Boucher says. "It's like having a common software bus and everything extends off this bus — and that bus can be CORBA or DCOM.

"If it's DCOM, then Microsoft practically owns the world," she says.

Becoming a cross-platform isn't the only change for ActiveX in the coming year. Microsoft also is focusing on better tool support, largely from Visual Basic 5.0 and the Internet Studio products. Both are expected early in 1997, Willis says.

The latest version of Visual Basic is aimed directly at the Internet and thus at ActiveX. In an attempt to keep the many Visual Basic developers who are eager to program Internet applications from jumping to Java, Microsoft is ramping up Visual Basic for the World Wide Web. Visual Basic 5.0, with its Control Creation Edition, is the only language other than C++ that can build ActiveX components.

Enabling Visual Basic to build ActiveX components may produce a bunny-like flurry of production. At least, that's what Microsoft is counting on.

Java maneuvering

On the other side of the battle, Java is gaining momentum with cross-platform capabilities. It's also tapping the part of the industry that loves to hate Microsoft.

The Java brand name seems to be almost everywhere these days: on a programming language, software components, an operating system and even computer chips. Like ActiveX, Java is an architecture for distributed computing — but ActiveX is optimized for Windows, whereas Java was designed to run on almost any platform.

That flexibility has led to trade-offs. Users complain about the slow start-up for Java compared with ordinary applications. Developers protest that the lack of tools and third-party libraries slows the development process.

"Like everybody else, I'm still one of those people asking for better development tools," says Larry Hagerty, a Java senior systems analyst at the GTE Data Services subsidiary of GTE Corp. in Tampa, Fla. Some tools are "too sluggish, too slow for real intensive work," he says. "We haven't really settled on one tool to use companywide yet because we think it's too early."

Sun plans to speed up Java performance on Windows and improve the language's libraries in the next version of the Java Development Kit, which is due early in 1997. Good idea, users say. "Windows is the predominant operating system, and people need speed," says Paul Mahowald, vice president of IS at the Blockbuster Entertainment division of Viacom International, Inc. in Fort Lauderdale, Fla.

Java also will gain some maturity in the form of visual builders: Borland International, Inc.'s Latte, Symantec Corp.'s Visual Cafe, SunSoft's Java Workshop and IBM's VisualAge for Java. "Having the visual application builders will be the big kick-start for widespread enterprise use," says Graham Hamilton, an engineer at Sun's JavaSoft division.

Who's controlling it?

Another concern for many corporate users is that ActiveX and Java each are controlled by a single company. Hoping to allay those fears, Microsoft in October formed a committee that will control certification and licensing of ActiveX. But the vendor still controls development of the ActiveX technology.

In November, Sun said it also may turn Java over to a standards group. "Sun should really turn that over to [a standards body]," says Larry Podeszik, director of technology at Strategic Technology Resources, a Chicago-based Java consultancy. "That would assure users that Sun will not suddenly change the Java specifications for its own advantage."

But Microsoft and Sun seem likely to keep a tight grip on their key development technologies, hoping to gain a tighter grip on users. "They're racing for my heart, my mind," Mahowald says. "This isn't a decision you make every year or so. They know whoever gets developers' mind share early will win."

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By Matt Hamblen

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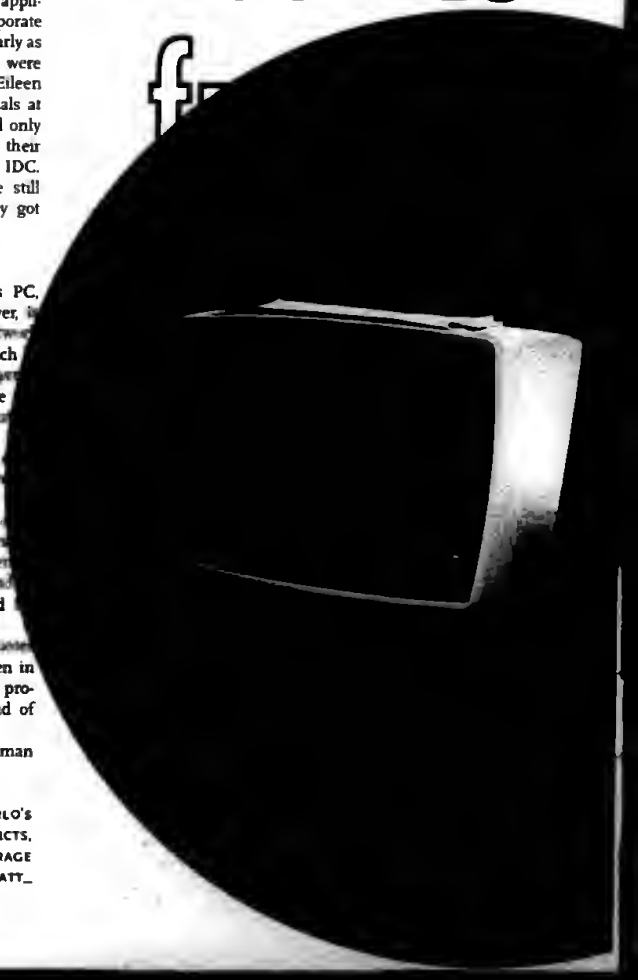

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Computer

By April Jacobs

The appearance of the network computer on the desktop horizon was one of the hottest topics of '96. Oracle Corp., Sun Microsystems, Inc. and IBM all unveiled versions of this lower-cost network access device during the waning months of the year.

Hype and hoopla aside, what most interests information systems managers about network ...uters is the tantalizing pos... ...that they could slash the ...,000 annual cost of ...by more than half. ...ld come mostly ...and adminis... ...in manag... ...ntralized ... on in...

...of ...r-... ...12 ...l its ...p de... ...ted to ...of 1997 ... Compaq ...ll feature a ...d to give users ... load and run ap... ...ally.

...t is this network com... ...really? In essence, it's the ...rst wave in client desktops, following the dumb terminals of the '60s and '70s and the fully loaded desktop PCs of the '80s and '90s. The new twist is the stripped-down simplicity of the devices and the way they use Internet technologies for core functions.

To be called a network computer — as defined by Oracle, Sun, IBM and others — a device must be able to run a World Wide Web browser and support Sun's Java application environment. Because it has little or no local storage, the bulk of data and applications reside on a network server.

A network computer communicates over a network via standard Internet protocols, and it exchanges electronic mail through several established Internet mail protocols.

It must also be able to read several file formats, such as Hypertext Markup Language.

A critical difference between network computers and desktop PCs is that the network computer "reference profile" standard doesn't specify the underlying operating system, hardware or CPU. This leaves it wide open for adoption or retrofitting by any existing platform, from Unix workstations and Macintoshes to Intel Corp.-based PCs.

Kent Polzin, director of technical operations at Atlanta-based Simmons Co., the second-largest mattress and bedding company in the U.S., says network computers will help him manage support costs, particularly in the company's 17 plants throughout the continental U.S., Puerto Rico and Hawaii.

"If we have a problem in one of those plants, we don't have someone dedicated [to fixing computer systems] on site, so a significant amount of time is spent on the phone with PC-related problems," Polzin says.

Network administrators especially like the idea of being able to support applications from a central location. That allows them to update and troubleshoot client machines.

Here's a rundown of the various network computer offerings:

- IBM's Network Station, available now, features an IBM processor, 8M bytes of memory and a network adapter card. It costs less than $700, including a keyboard and mouse. A Network Station with a standard color monitor will cost $1,000.
- Oracle's Network Computer, due out the first half of 1997, ... run Java applications, feature ... Intel Pentium processor ... work with both Netscape ... munications Corp.'s ... Web browser and Oracl... sonal Lite Database.
- Sun's JavaStation ... operating system and ... 85 Java-based appli... also features a H... browser and can ac... applications.

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TAKING THEIR TIME

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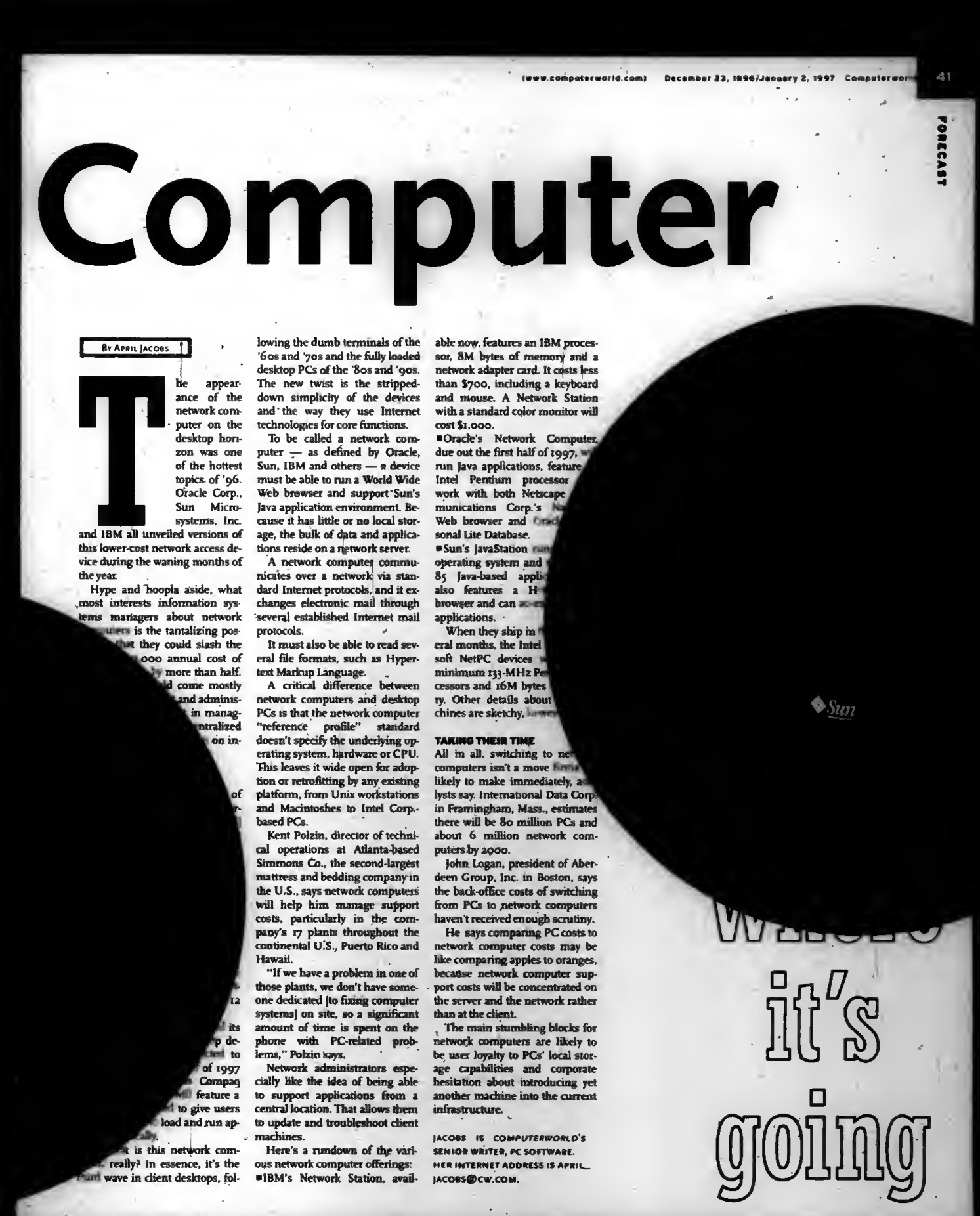
John Logan, president of Aberdeen Group, Inc. in Boston, says the back-office costs of switching from PCs to network computers haven't received enough scrutiny.

He says comparing PC costs to network computer costs may be like comparing apples to oranges, because network computer support costs will be concentrated on the server and the network rather than at the client.

The main stumbling blocks for network computers are likely to be user loyalty to PCs' local storage capabilities and corporate hesitation about introducing yet another machine into the current infrastructure.

JACOBS IS COMPUTERWORLD'S SENIOR WRITER, PC SOFTWARE. HER INTERNET ADDRESS IS APRIL_JACOBS@CW.COM.



Computer

By April Jacobs

The appearance of the network computer on the desktop horizon was one of the hottest topics of '96. Oracle Corp., Sun Microsystems Inc. and IBM all unveiled versions of this lower-cost network access device during the waning months of the year.

Hype and hoopla aside, what most interests information systems managers about network computers is the tantalizing possibility that they could slash the $10,000 annual cost of PCs by more than half. Savings would come mostly from easier and administration in managing centralized applications on in-

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- Oracle's Network Computer due out the first half of 1997, will run Java applications, feature an Intel Pentium processor, work with both Netscape Communications Corp.'s Navigator Web browser and Oracle's Personal Lite Database.
- Sun's JavaStation, running its operating system and 100% Java-based applications, also features a Hot browser and can access applications.

When they ship in the several months, the Intel- soft NetPC devices will minimum 133-MHz Pentium cessors and 16M bytes of ry. Other details about chines are sketchy, however.

TAKING THEIR TIME

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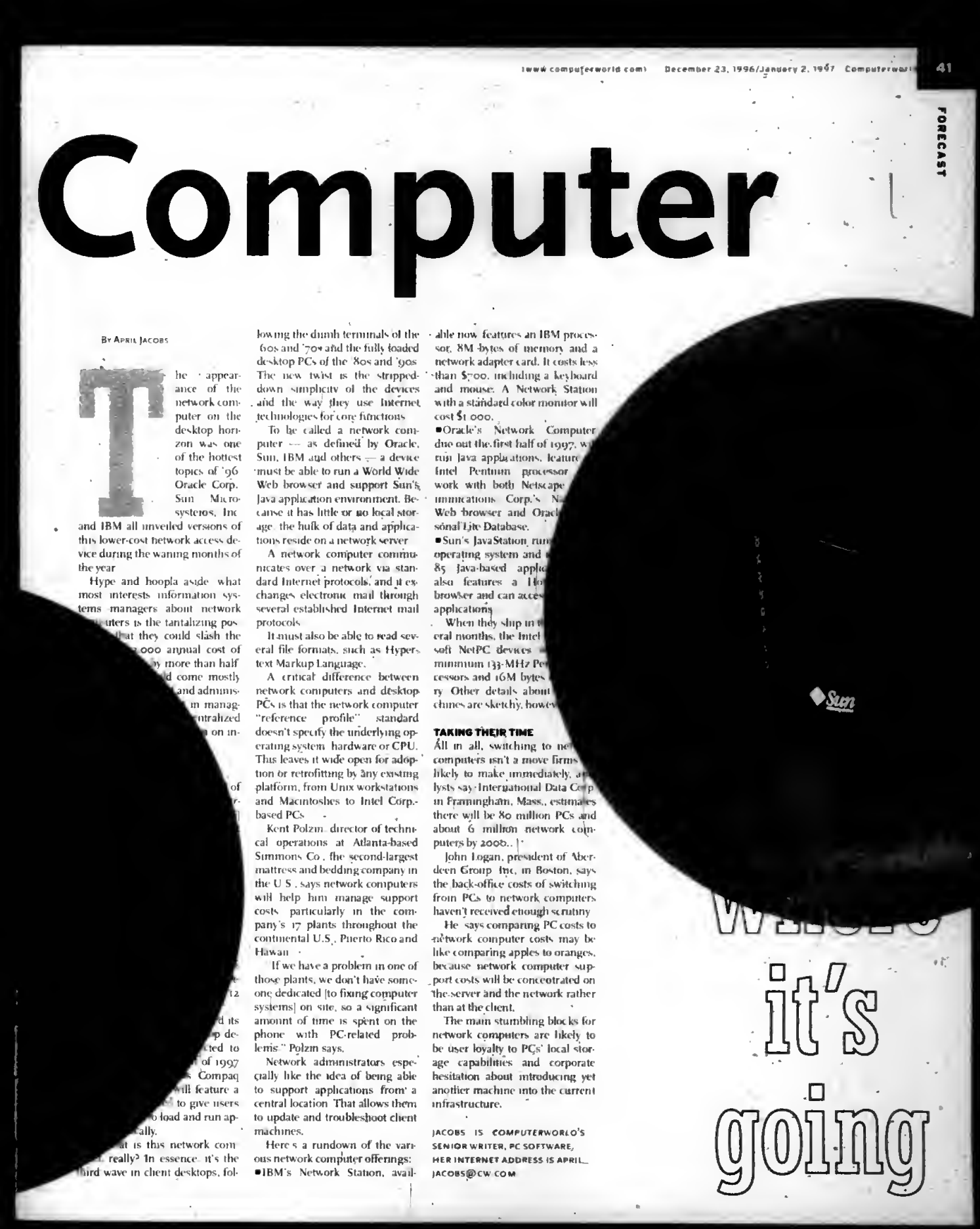

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FAMOUS FORECAST FLOPS

By Steve Ulfelder

Not long ago, on the CNBC television network, a financial analyst was asked for his prediction on a turbulent company's stock. He confidently stated a target price. The host pressed for more: "When will the stock hit that?" The analyst blinked and blanched and stammered. Then he gave up, broke into an "I'm-so-busted" smile and said, "They say to never give a price and a date in the same sentence."

Prognosticators of all stripes – analysts, consultants, even journalists – never run out of tricks. Face the camera, square your shoulders, and make your call. If you're wrong, everybody will forget soon enough. If you're right, put it in your newsletter and milk it. But now every pundit's worst nightmare is here. We've combed the past five Computerworld Forecast issues for some predictions that went over like New Coke, and we're ready to redden some faces – especially our own.

1992

1993

1994

1995

1996

the more things change . . .

CUSTOMERS

1992
"Keeping customers happy is top job for IS"

1993
"Customer service key in '93"

1994
"End users won't wait — give 'em what they want"

OBJECTS

1992
"OOP to get serious in '92"

1993
"Objects are in"

1994
"Object-oriented programming tools are definitely on the 'in' list"

1995
"Well-managed objects hold great promise"

WIRELESS

1992
"Wireless computing will become a pretty standard option ... by the end of '92."

1993
"Wireless systems ... will play a key role"

1994
"Digital assistants to come of age in 1994"

1995
"The future: Unplugged"

1996
"What happened to the wireless revolution?"

IDC INSIGHT

Successfully Migrating

Corporate America is fast embracing Windows NT workstation for its desktop computing as it seeks a true multitasking, robust, 32-bit OS with reliability, security, and high performance. The Penoum Pro, offering superior speed and performance, is far and away the preferred platform for NT. These were among the key findings of IDC's recent global survey of 1,500 corporate enthusiastic NT adopters and active evaluators.

International Data Corporation (IDC), the world's leading information technology (IT) research firm, recently surveyed 1,500 medium-sized and large corporations around the world about their advanced desktop PC usage and plans via in-depth telephone interviews. Primarily, the research analyzed how corporations are currently using and adopting advanced Windows NT/Pentium Pro systems and what users found as key drivers and constraints. The study focused on advanced adoption so that organizations adopting less than 10% NT systems among their total systems, within the next two years, were excluded from the survey.

The market momentum for NT/Pentium Pro systems will intensify over the next 3–18 months, especially among U.S. corporations. Key drivers for this upward migration include the accelerated ptice/performance improvements of the Penoum Pro; the increasing availability of 32-bit applications; and recent release and success of Windows NT Workstation 4.0. IDC predicts 1998 to be the pivotal cross-over year when U.S. Pentium Pro Processor PC U.S. sales will exceed Pentium Processor PCs overall, and when NT will surpass Windows 95 on desktops in large corporations.

Key Advanced PC Study Findings

- By YE 1997, half said at least 50% of new PC purchases will be Pentium Pros.
- Corporate user plans by late 1997 include the following:
  - 150% increase in Windows NT
  - 50% decrease in Windows 3.X
  - 50% increase in Windows 95
- Within two years, the majority of internal application development will be 32-bit.
- Reliability, security, and performance are top reasons for choosing NT over Windows 95.
- Twenty-five percent of respondents will gradually roll out NT company-wide; 50% will roll out NT selectively.
- Key NT applications are general office, software development, technical/engineering, customized business, and multimedia.
- Performance and speed are top benefits of running NT on Pentium Pro PCs.
- Cost, hardware requirements, and incompatibility with existing software/peripherals key barriers to adoption.

Why Upgrade to Advanced PCs?

Corporate PC users are constantly seeking better CPU performance, more memoty, faster data access rimes, and more powerful OS and application suites. In the late 1990s, technology continues to accelerate with more intensive requirements due to the increase in the size of applications and graphics-intensive files; expanded multimedia data types (color images, audio, and full-motion video); the inclusion of more software (Web browsers, utilities); and the constant IT mandates to cut costs and improve productivity. In addition, the tremendous growth in the Internet, Web, and corporate intranets is bringing ever-greater amounts of data to the desktop.

Recent and unprecedented price/performance improvements in advanced PC systems have whetted organizations' appetites. IDC PC pricing research indicates the cost of Penoum Pro systems will decline a full one-third to nearly half (or 33–47%) from the beginning to the end of 1996, depending on chip speed. As an industry example, consider the advanced desktop offerings in late 1994 vs. late 1996 from AST Computer. AST's high-end brand series has dropped in price by more than one-third, from about $4,300 to about $2,850 in estimated street price, while the overall performance offering has more than doubled. In short, there has never been a time in which corporations have needed advanced desktop PCs more, nor a time in which cost justification for upgrading has been stronger for the business enterprise.

Pentium Pro—Platform for and to the Future

The Pentium Pro, Intel's sixth generation microprocessor family, released in late 1995, was specifically designed to optimize the performance of 32-bit code while maintaining backward compatibility with previous x86 code. In essence, the chip is a bridge between today's world, which predominantly uses 16-bit OS (Windows 3.X) and applications, and the emerging world of 32-bit OS (NT, Windows 95) and applications, which is fast becoming the industry desktop standard. The Pentium Pro also offers unparalleled speed and performance through its superscalar and superpipeline design; Intel's "Dynamic Execution," and its L2 "cache do-board" dual-chip module.

As prices further decline, IDC predicts that demand for Pentium Pro PCs will increase significantly, especially in the corporate environment. Current street prices for NT/Pentium Pro systems have now falleo to less than $3,000—within the range of most corporate IT budgets. Accelerating price competition and expanded product selection will continue through 1997, which will further fuel the market. IDC anticipates Pentium shipments will peak in 1996, and the Pro, with 15 million units, will surpass Penoum sales (13.9 million units) as the dominant PC platform in the total U.S. market by 1998 (see Figure 1).

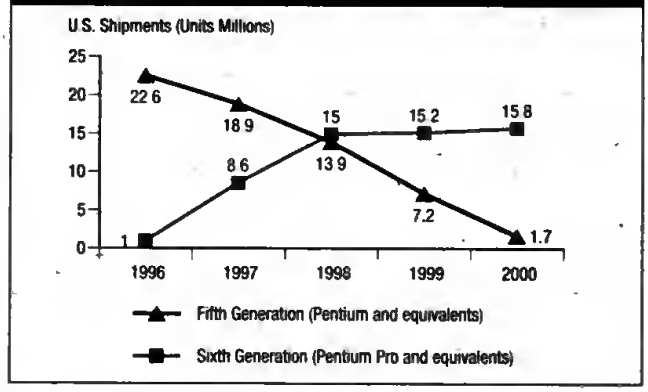
The Corporate Move to Windows NT

Migration to the 32-bit desktop enables true-mulritasking, improved stability, virtual memory, muloprocessing, and robustness. More than half (53%) of those IDC surveyed currently do 32-bit application development. Key drivers of 32-bit adoption cited by the IDC user base included new application availability, price declines, performance gains, and the success of NT

Sponsored by AST COMPUTER

to Next Generation PCs

Figure 1 – Pentium vs Pentium Pro Processor Ships



4.0. Within two years, three-quarters of all internal PC application development will be 32-bit.

Again, IDC user research bears out corporate America's preference of Windows NT over Windows 95 or any other OS. Corporare users surveyed included in their 12-month plans a 150% increase in the use of Windows NT. They saw a decrease of Windows 3.X or Windows for Workgroups use by about 50% and an increase of Windows 95 by only 50%. Users cited reliability, security, performance, and robustness, in that order, as the most important reasons for choosing Windows NT over Windows 95. The primary departments driving advanced desktop computer system purchases among IDC respondents are MIS/DP, engineering, and R&D-traditional leading technologists, as might be expected. Somewhat surprising, are the current applications users identified running under NT such as general office automation packages (word processing, e-mail, spreadsheets) or today's general mainstream desktop applications (see Figure 2).

Among corporations polled, the Pentium Pro was also the preferred platform to run NT. Fifty percent of respondents stated that at least half of all their oew PC purchases will be Pentium Pro systems by the end of 1997.

The Call to Action

The decisioo of when and how to upgrade an IT infrastructure is difficult and complex. Hesitating can be even more hazardous, possibly leading to forfeited opportunity costs and lost productivity. As we approach 1997, it is clear that the U.S. corporate migration process to NT/Pentium Pro PCs is far beyond initial assessments.

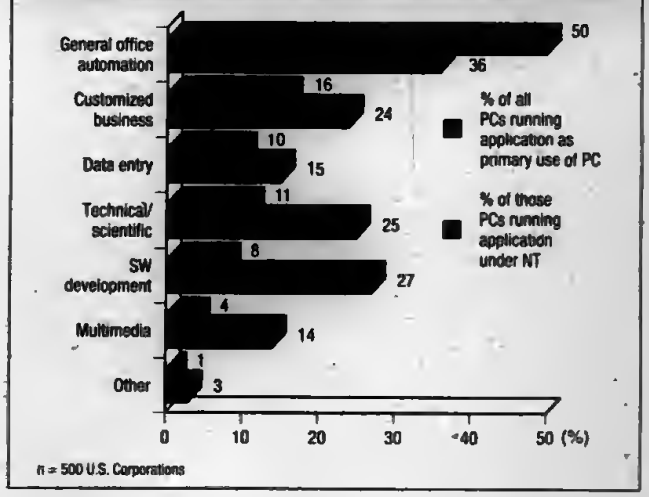
Perhaps the only thing as important as choosing the right advanced PC is choosing the right vendor partner behind it. The top criterion among the survey respondents were price/value and technical support. IDC recommends users to look for PC vendors that push the price performance ratios and offer the most complete total value package. Closely examine what prospective vendors include in:

- Hardware (components, configurations, investment protection);
- Cost of ownership (virus protection, data and system management, real time diagnostics);
- Productivity enhancement (Internet/intranet, utilities);
- Vendor viability;
- Product quality and price/performance.

IDC predicts that 1998 will be the pivotal cross-over year when Pentium Pro outstrips Pentium U.S. sales overall, and NT surpasses Windows 95 on desktops within large corporations.

Given its total value, performance benefits, and headroom, the time for serious consideration of NT is here. The collective experience and insights of 1,500 corporate users—senior IT managers already in upward PC migration, can greatly benefit an organization's information technology design and planning.

Figure 2 – Current PC Applications Share for NT PCs



This Insight was written independently by IDC and sponsored by AST Computer. For a complimentary copy of IDC's full White Paper on migrating to Next Generation PCs (Asian, European or U.S. versions available), please call AST at 1-800-447-0023 x 100 or check the AST Web site at http://www.ast.com

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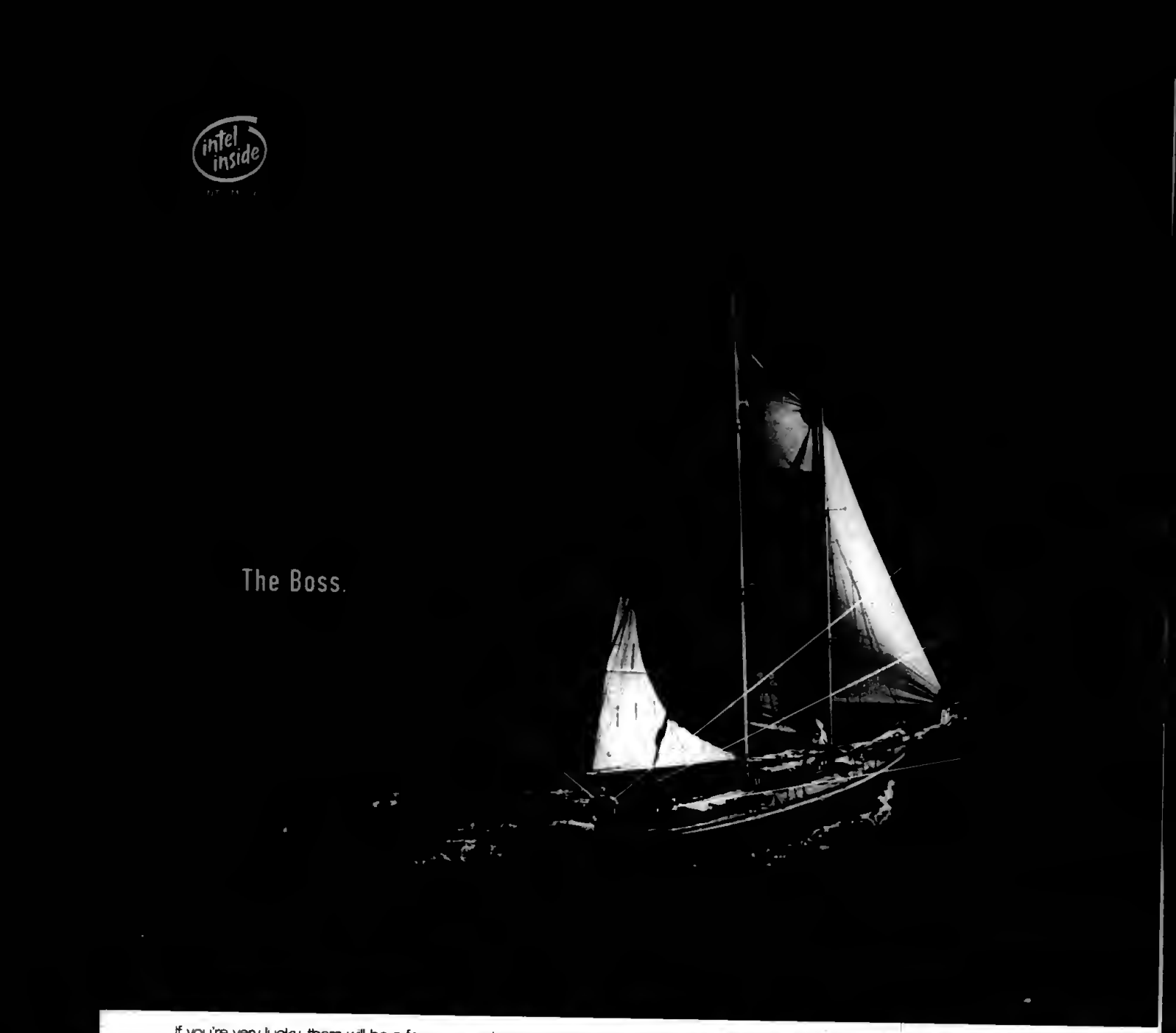

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The guy who chose the AST Bravo computers
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OPINION

Fast forward With 1998 just around the corner, it's a great time to look back fondly at an eventful 1997. Here are a few of my personal highlights:

- **Windows 97:** Just when we thought OS/2 was dead as a rock, Windows 97 comes out with more bugs than a Roach Motel. Who'd have thought this upgrade would be such a dud?
- **The year of ISDN:** You could have knocked me over with a feather on this one. How did the RBOCs get their act together so fast? Better luck next time, cable modem makers.
- **Year 2000 panic:** Three-year insurance calculations blow up in January. Gartner calls it a "$10 trillion problem." NBA-size signing bonuses for 50-something Cobol jockeys. SAP programmers green with envy.

- **CA buys Digital:** Hey, it's *Computer* Associates, not Software Associates. Free Alpha with every copy of CA-Unicenter, Mr. Wang?
- **The Internet crash:** Wow, we knew IP spoofing was a big problem, but we didn't know hackers could take down the entire state of California for a couple of days. Sorry, San Francisco!
- **Netscape's comeback:** The Pepsi bundling deal was a stroke of genius. Free browser with every bag of Fritos. Eat your heart out, AOL!
- **Apple's gamble:** Steve Jobs is back, Gil Amelio is out, and everything is "insanely great" in Cupertino again. Now, how will Macintosh users take to the BeOS?
- **The Gates fire:** Who would have thought Bill Gates would spend $30 million on a house of high-tech wonders and forget to install smoke detectors? Good thing it just singed the kitchen a bit.
- **Network computer mania:** I never expected users would so willingly trade in their PCs for network computers. But then, I didn't expect Madonna to do a Java music video, either.
- **Data boutiques:** So even data marts turned out to be a bigger maintenance job than anyone expected. What's next, data pushcarts?
- **Internet commerce:** Next year for sure, we're going to figure out how to make money on the Internet, right? Right?
- **Whitewatergate:** The big story of the year, of course. So many skeletons in the Clinton closet! Let's hope the new Gore administration has less to hide.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

LETTERS

Video toasting the Trekkies

IN THE DEC. 2 issue of *Computerworld*, an Inside Lines item mentioned the opening of the movie *Star Trek: First Contact* ["Star Trek viewers The Tech Generation"]. It seems that Microsoft saw fit to run a commercial for The Microsoft Network prior to the movie that was met by "boos, hisses and catcalls." The item went on to say, "Must have been a Unix crowd." What? Did the writer really not know that all the *Star Trek* series use the Amiga system along with the Video Toaster (designed and built around the Amiga chip set) to produce the special effects on the shows? Although there may well have been a Unix person or two in the crowd, the reaction was due to the large number of Amiga users in attendance.

J. W. Olson
Walla Walla, Wash.

Treat me like a consultant, but pay me like one, too

IN THE "Making change at Sears" article [CW, Oct. 21], writer Robert L. Scheier reports on Tom Clarke's class on service excellence for IS professionals.

Clarke says, among other things, that IS professionals should think of themselves not as employees with guaranteed jobs, but as consultants who must earn their keep every day.

As a consultant programmer, this made me smile. How can any organization be so one-sided, so inconsiderate and so unethical as to even suggest that employees give consultant-quality work and live with the stresses of consultant-quality uncertainty without even suggesting that they be given consultant-quality compensation?

Leonard J. Silberstein
Ellicott City, Md.
KVPM99B@prodigy.com

OS/2: Poor IBM marketing?

MICHAEL SCHRAGE'S column ["Why stop at knowledge management?," CW, Nov. 11] hit the target dead center. What good is knowledge without wisdom?

IBM and its marketing of OS/2 is a prime example of having excellent technical knowledge but poor wisdom in marketing. OS/2 Warp remains a strong, stable and powerful operating system, but due to IBM's lack of wisdom, it had to concede the desktop to Microsoft.

What good is knowledge without wisdom?

Now IBM appears to be doing the same thing to Warp Server, a superior product in many ways to Windows NT and Novell NetWare.

IBM has used its technical knowledge and created a fantastic product but still doesn't seem to have gained the wisdom to market it properly.

Jim Herman
Phoenix
71023.117@compuserve.com

Classic alternative to PCs

IF "PCs cost too much to maintain and don't deliver enough return on investment" [CW, Nov. 25], maybe more people should check out the comparative advantages of the Mac OS platform.

Some years ago, when our office minisystem began to signal its plans to retire, we migrated quickly to a LocalTalk network of nine Macintoshes and two PCs. I'm not a network engineer, and my only formal training is in the mainframe/PC world. But this Macintosh network came together with ease and has performed more than adequately for several years.

Leland Beaudrot
Greenville, S.C.

Been there, done that

IN THE "Mean, lean mainframes" story CW, Nov. 25], you make note of IBM, Amdahl and Hitachi shipping improved-performance CMOS mainframes and integrating Unix and Windows NT platforms next year.

You left out the fact that Unisys has been shipping CMOS-based mainframes since 1993 and already ships mainframes with integrated NT and Unix environments.

The article gives the impression that IBM and its plug-compatibles are on the leading edge of a trend, when, in fact, they are on the trailing edge.

Keith Stone
Systems administrator
Laboratory Corporation of America
Burlington, N.C.

More letters, page 52

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Msss. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Get in shape for the 1997 IS marathon

Jim Champy

A chief information officer recently asked me if there is any prospect of his job getting easier soon. "I'm breathless," he said. "There's no time to rest." My answer: Take a lesson from distance runners — learn to breathe differently.

CIOs will have to think creatively about adding business value and outsourcing the leftovers

Whether your company's change program is re-engineering, reinvention, redesign, transformation or what Hallmark calls "the journey," you're in for a marathon in 1997, not a 50-yard dash. Like a runner "putting in the miles," IS managers will have to stretch their management and intellectual muscles to think critically about all facets of their business.

There are the usual issues of reducing costs and cycle times, increasing process efficiency, and making customers and employees happier. But there are two new questions to consider. First, how can IS fundamentally change the business your business is in? Second, what do you do with parts of IS that aren't so strategically important?

The first question will challenge both IS and line managers, as each company closely re-examines the purpose of the business. In 1997, IS and line managers will have to stop thinking about IS as a back-office cost center and start thinking creatively about how IS adds value to the company's ultimate customer. For example, in retail banking, IS could consider an Internet-based "virtual bank" that is always open and costs one-tenth of a bricks-and-mortar branch system. In health care, could IS help with patient self-diagnosis?

The question of what to do with nonstrategic parts of IS will continue to fuel the rush to outsourcing. But line managers, particularly, will begin to recognize that just dumping chunks of the IS function on someone else's lap may eventually put them at a strategic disadvantage. For example, customer billing may seem like a mundane operation that's easily dumped — until competitors start using fancy billing options to steal customers.

That doesn't mean IS management should resist outsourcing. Strong economic and technology forces will continue to favor third-party relationships. But those relationships must go beyond cost reductions. They should create new opportunities for business growth. Do you have capabilities, such as a first-class customer service center, that could be applied to other industries if you had a partnership with a technology company?

The challenge for IS management is to make sure those partnerships have a business payoff. An increasing amount of IS management will take place outside the company.

Meanwhile, customers will become more demanding because they will have more choices in highly competitive markets. So you'll have to make operational changes to compete. It's clear that the age of re-engineering isn't over; it's just beginning.

All of the above — rethinking how IS adds value to the business, creating technology alliances and continuing to redesign work processes — will contribute to the intensity of the IS workplace. CIOs will have to make sense of what's happening so that IS staffers can be led by a substantive vision of the future, not driven by fear.

Of course, besides having to deal with those questions of purpose, process and people, IS management will also have to continue its move to new technology platforms. Maybe this isn't so much a marathon as a triathalon.

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His newspaper columns are syndicated by Tribune Media Services.

Attack of the RealAudio viruses

Michael Schrage

Predicting the future is the occupational hazard of the pundit. With the possible exceptions of sports and the Dow Jones industrial average, no domain provides more tempting opportunities for annual self-humiliation than computerdom.

Doctors get to bury their mistakes. Columnists have their mistakes archived in Nexis, where mean-spirited rivals and PR goons can use them to undermine the pundit's credibility.

So with disavowals clutched firmly in hand and tongue epoxied to cheek, here are a few fearless forecasts for the coming year. Enjoy!

■The first multimedia virus invades the Internet. All RealAudio references to "Bill Gates" are virulently replaced with an epithet unprintable in a family newspaper. Other multimedia viruses replace images of corporate logos with images of naughty bits and/or scatological parody logos. These multimedia viruses infect Web sites worldwide.

■On the intranet front, the pathogen planters become more sophisticated: Instead of launching viruses that crash hard disks and delete vital documents, their viruses work in a more subtly devastating fashion. They randomly change plus and minus signs in spreadsheet macros, shift decimal points and add or delete the word "not" in front of verbs in the most frequently accessed enterprise reports.

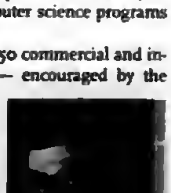
■To plug its ongoing and commercially annoying gap in the database market, Microsoft acquires either Sybase or Informix. What the heck — Gates acquires both.

■Bidding to move right to the desktop @home and @work, Cisco buys modem leader U.S. Robotics.

■Each Baby Bell bundles Internet access into its basic service package and automatically makes your phone number serve as your E-mail address as well (for example, 312.123.4321@ameritech.com). For a measly $2 per month, they'll reflect E-mail sent to that address to whatever address you select. They'll call it "the Internet access fee."

■The JavaSoft Consortium creates a $10 million fund to help integrate Java into the computer science curricula of leading universities. MIT, Stanford, Carnegie-Mellon, the University of Illinois and the University of California graciously accept the offer and promise to make Java part of their computer science programs by 2001.

■The world's top 50 commercial and investment banks — encouraged by the Group of Seven industrialized countries' central banks — announce they will share all the information and data they have to cooperate on managing the year 2000 date fields problem. The U.S. Department of Justice, however, refuses to grant an antitrust waiver.



Our pundit uncorks some predictions: Microsoft buys Sybase, spreadsheets unravel

■IBM finally announces it will bundle the Lotus Notes client into every PC it sells.

■Ten Northeastern and Midwestern state governments and the U.S. General Services Administration announce they will standardize governmental intranets on Netscape browsers and servers. Rumors swirl that the initiative was intended to "send Microsoft a message." The state of Washington goes the Explorer route.

■American Express buys one-third of Intuit.

■WebTV hardware costs $99 by next Christmas.

■The design and implementation of integrated media call centers — which handle inquiries from telephone and Web customers — is described as the most important mission-critical systems project in a survey of the top 1,000 IT users.

■Wired Holdings finally has a successful initial public stock offering.

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

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LETTERS

Software criticism strikes a chord

PAUL STRASSMANN's column ["Software: So bad, it can only get better," CW, Dec. 9] hit home for me.

I have discovered that many "programmers" sit down to a spreadsheet and start programming. The results are inflexible at best. Yet users are impressed with the quick turnaround. Then they can't understand why it will take someone building a (relatively) object-oriented database so long.

I am cleaning up such a mess for my church's day care program now, and Strassmann's writing really struck a chord. Good job, and thanks.

Michael Hovan
Goshen, Ind.

COMPUTERWORLD columnist Paul Strassmann hit a nerve. I work for the University of Missouri as a programmer. I am not truly qualified by any realistic measurement to be a programmer, though.

I am largely self-taught. That is to say, I am a professional hacker. I have never enjoyed the luxury of curling up with a good Knuth book. I was admitted to the university's computer engineering graduate school this fall, but I bailed out of my classes because of their out-of-dateness and their lack of real-world application.

My job and the $500-plus worth of books I've bought are my best educators. I'm in the real world of computing, and believe me, there is simply no time to be thorough and groom a good pedigree.

Lawrence W. Bottorff
Columbia, Mo.

I THOROUGHLY enjoyed Paul Strassmann's piece in *Computerworld*. The state of software is increasingly shocking. For example, I downloaded United Airlines' United Connection software. When you sign on, it asks for a frequent-flier number, credit card, etc. When it validates these numbers, it chokes on spaces or dashes between digits. The address validation for the credit card failed because I put # in front of my street address (#2, instead of 2). I had to call support just to get registered.

I tried to install Netscape on a client's Windows 3.1 machine; the install hung the machine. When there's a bad phone connection, Trumpet Winsock Dialup TCP/IP says, "PPP negotiation failed." What am I, the user, supposed to do about it?

As I write, I am trying to download the Windows 3.1 version of Microsoft's Internet Explorer. It just stopped 137K into the download. It has been like this for five minutes. Of course, I am still getting the nice visual confirmation of flying folders in the download window as if everything is working great. It's not. All of these problems occurred in the past three days.

Something has got to be done. Unfortunately, if we boycott buggy software, I would have to get a new job because there would be very little software left to use.

Tom Harrison
Boston

RIGHT ON, Paul Strassmann! I just wish your article had made the front page of *Computerworld*. I work on a computer help desk, and I couldn't agree with you more. Just yesterday, I got a call from a user who had three applications open when her system froze. She couldn't believe that this could happen on a Pentium-based machine. I wasn't surprised. I tried to explain to her that it was the software, but she wouldn't buy it.

I also see our techs running around like crazy trying to complete projects with unrealistic deadlines while putting out fires every day. Some days I wonder why I picked such a stressful career.

Lisa Santuro
Scottsdale, Ariz.
lsanturo@ci.phoenix.az.us

The Corps curriculum

I READ Thomas Hoffman's article about the U.S. Marine Corps' use of multimedia in training ["Multimedia drives training at Marine Corps," CW, Nov. 4].

As a former Marine, I am glad to see that the cutting-edge spirit of the Corps is recognized as transcending the areas that many people traditionally associate with the military. I received my training as a mainframe systems programmer in the Corps and consider myself fortunate to have that experience as an integral part of my personal and professional life.

Al Peirce
Senior systems programmer
USA Group
Fishers, Ind.

Windows NT is in Sun's shadow

I RECENTLY READ Paul Gillin's Up Front column in the Oct. 21 issue on Windows NT and Sun workstations. Whoa! How can you expect Sun to sell NT for its line of workstations? NT doesn't even come close to matching the capabilities of Solaris.

I have been an administrator of Solaris, SunOS, Windows 95 and Windows NT systems for a few years. Sun's operating systems are way ahead of anything that ever came out of Redmond, Wash. Microsoft simply takes other companies' ideas (DOS, Windows and ActiveX), invests millions of dollars in marketing them, gives them away to gain market share and then makes the public wait years for the next *late* release.

Sun's Scott McNealy is not only "one helluva salesman," he's also very smart. He knows he has one of the best operating systems in the world.

Brian Curfman
Fairmont, W. Va.
curfman@cards.com

Pigeonholing sales reps

WE HAD GREAT fun assigning sales representatives we have known to the various categories described in "Meet the new rep" [CW, Nov. 25].

However, we found it even easier to assign types to particular vendors because the type of rep that you get is often determined more by the vendor's management style. Forrest the Groundskeeper is the prototypical IBM account executive but would be quickly swept aside at a quarterly-revenue-driven high-tech vendor where patience is not a virtue. There are whole vendor companies composed of either Superheroes, Legacy Larrys or Moonstruck Marys.

Ed Muldoon
Software Decision Consultants
Glenview, Ill.
73423.1010@compuserve.com

A pill that's hard to take

I'VE BEEN WAITING for the past six months for someone with guts enough to summarize the "Kool-Aid" pill Microsoft has been trying to hand out.

Paul Gillin's "Standards sham" column [CW, Dec. 2] about Microsoft's native code complier and set of class libraries that will run Java applets a lot faster is just what we all need to counter that horse-size placebo Microsoft is handing out on "free" plates to developers and their managers. Thank you for such a great article.

Paul Armstrong
Novastor Development
Flagstaff, Ariz.
paul@novadev.com

How do you beat free software?

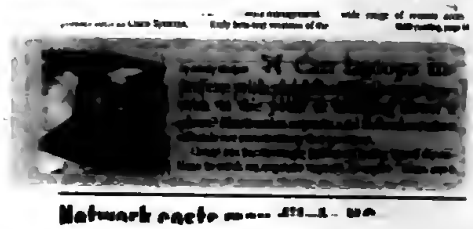
I WAS REALLY bothered by the quote from Mark Gallagher of First Chicago in the Page 1 story "Gates gaining Internet ground" in your Dec. 2 issue: "If Microsoft remained asleep at the wheel, Netscape would be ... charging us $50 for Navigator and $5,000 minimum for Web server software."

This attitude — that software is something that should be available for free — and your pushing of this attitude are ludicrous. The authors of Navigator, in addition to creating a really great idea, invested their time, energies and lives in this product. How are start-up software companies going to stay in business if, whenever a significant market appears, Microsoft develops a competitive product and delivers it for free?

Why should Netscape now be trying to figure out how to sell its products against a company that is using its financial prowess to give away a competitive product, drive Netscape out of business and control the marketplace? Is that what we want?

Barry Schrager
Rosemont, Ill.
71370.2466@compuserve.com

Laptop crashes shouldn't be fatal



I READ WITH SOME wonder your article on laptop interference with airplane controls ["Planes, laptops collide," CW, Dec. 2]. One would reach the conclusion that the solution to the problem is in the hands of each one of millions of individual travelers, who must remember to switch off their phones and computers lest they cause the deaths of hundreds of fellow travelers.

Responsibility apparently lies secondarily on the thousands of manufacturers of telecommunications and electronics equipment, who must guarantee that no pernicious radiation leaks from their devices, not only at manufacturing time, but even after the unit has been damaged, improperly repaired or maliciously altered.

If the problem is in fact real, the burden of a solution is on the shoulders of the aeronautics industry. I hope that Boeing, the Airbus consortium and the other airplane manufacturers find the solution before some two-bit terrorist figures out how to build an electromagnetic bomb disguised as a $5 calculator.

Fernando Colina
President
FC Software
Paris

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COMMENTARY

Good tidings for IS in '97

DAVID MOSCHELLA

Here are 10 predictions and themes for IS professionals to watch, enjoy and exploit in the new year:

1. Robust IS budgets. With a continued strong U.S. economy, renewed CEO faith in the value of information technology and incremental business unit funding, IS hasn't had it this good since the late 1970s.

2. Industry convergence accelerates. Be it WebTV, NetTV, Internet telephony, cable modems, Internet channels or multimedia World Wide Web content, the convergence of the four C's — computers, communications, consumer electronics and content — seems unstoppable.

3. Mergers of long-distance and cable companies. The announced mergers in 1996 of Bell Atlantic with Nynex and MCI with British Telecommunications were two of the biggest in history. The new year will feature megadeals between long-distance and cable TV players. Cable companies need new markets and deeper pockets.

4. Microsoft hasn't conquered the Internet yet. Microsoft amazed the industry in 1996 by suddenly becoming Internet-centric. But keep in mind that three years after its PCs were introduced, IBM had nearly 70% of the global PC market. It took time for the PC paradigm shift to magnify the weaknesses in IBM's business model. (See items 5 and 6.)

5. E-mail and word integration. The network-centric era eventually will fuse E-mail and word processing. Microsoft may have 75% of the corporate word processing market, but it has less than 25% of the E-mail business. Something has to give.

6. Internet broadcast explosion. "Push" media technology from PointCast, BackWeb, Marimba and many others can turn a PC into a personal TV-like receiver. That's Java's potential "killer application," hence Microsoft's sudden embrace of PointCast.

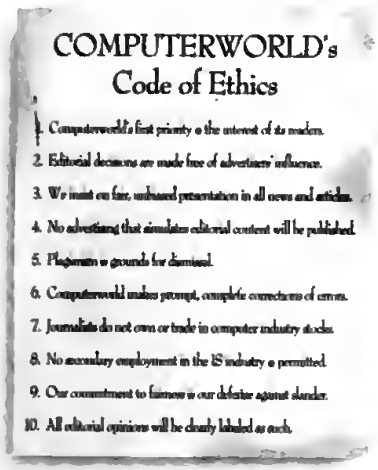
7. Extranets are real. Private, intercompany systems based on Internet technologies can solve many performance, reliability and security concerns and still benefit from "open" standards. At least until Internet systems with guaranteed service levels are ready, extranets will serve as a bridge between today's overemphasis on intranets and true electronic commerce.

8. Return of the handhelds. The new generation of small computing devices that use Windows CE or equivalent operating systems will enable users to have E-mail and Internet access without lugging around an expensive, high-performance laptop. Handhelds will become more feasible as browsers become a standard E-mail interface.

9. Slow start for network computers. Although network computers will eventually succeed in certain fixed-function tasks in corporations, schools, libraries, cybercafes, stores and building lobbies, none of these markets will grow fast enough to justify the current hype.

10. Asian giants invest in an Intel-compatible chip maker. Shortly after 2000, Asia will become the world's biggest PC market. Japanese, Chinese and Korean firms will tire of sending big checks to Intel. Although Jerry Sanders has always taken a staunch pro-U.S. trade position, his Advanced Micro Devices is the most direct path to serious global microprocessor competition. Customers all around the world will benefit.

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.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Users ask mail vendors: "Can't we all get along?"
Visual Basic, Java vie for 'net crown

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Briefs

Intel's PC makeover may take a while

By April Jacobs

DON'T EXPECT Intel Corp.'s plans to add video and 3-D functions to its chips to affect business users any time soon.

Intel has announced a three-year strategy for bringing video, video electronic mail and three-dimensional graphics to PC users.

The company broached the issue of changing the PC experience at Comdex/Fall '96 in Las Vegas in November with a demonstration of live video and 3-D technology. Intel officials said business and home users would demand that the PC become more like — and even better than — the television set.

With applications such as live videoconferencing, video E-mail and animated 3-D images, the company hopes to appeal not only to consumers, but also to corporations.

Users at Comdex appeared impressed by the technology, but they questioned whether it will fit in to their heterogeneous environments, which aren't entirely PC-based. They were also concerned about the cost.

Jim McGregor, a senior analyst at Scottsdale, Ariz.-based In-Stat, a division of Cahner's Publishing Co. in Newton, Mass., said companies may use 3-D and video with the technol-

Intel, page 56

Snapshot

Source: Gartner Group, Inc., Stamford, Conn.

Boeing is designing new jetliners completely by computer, and the RS/6000 will play a major role

Boeing to shift design to RS/6000

By Tim Ouellette

THE BOEING CO., which entrusted its latest airplane design process completely to computers, is now moving its design software off the mainframe and onto IBM's RS/6000 workstations.

"The technological growth is in the workstation," said Chris Klomp, director of systems development and maintenance at the Seattle aerospace giant. "The technology there is moving very quickly."

These improvements include quicker processors for the RS/6000 [CW, Nov. 25], 64-bit operating system support and improved graphics capabilities, observers said.

The workstation decision was bolstered by the fact that Boeing officials found more improve-

Boeing, page 56

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Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Firm unveils notebooks

A new player has jumped in to the cutthroat notebook market. Tranmonde Technologies, Inc., a start-up in Cerritos, Calif., recently unveiled the Vigor and Vibrant notebooks. The models are available now and cost between $1,499 and $3,299.

HP printer, server

Hewlett-Packard Co. said it is offering an enhanced print server with printer management features that will reduce the cost of a LAN color network printer and server to less than $800. The HP JetDirect EX Plus printer server adds a two-way communications link with the DeskJet 870 printer that wasn't in an earlier version, HP officials said. The server costs $290, and the printer costs $499.

EMC year 2000 tests

Comdisco, Inc. has purchased $4.8 million worth of Symmetrix storage systems from Hopkinton, Mass.-based EMC Corp. for its year 2000 testing service. Comdisco in Rosemount, Ill., will let customers test their data on Symmetrix systems while their own systems are converted.

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Intel, page 56

Snapshot

Projected revenue share for operating system shipments in 2001

Server shipments less than $100,000

Server shipments greater than $100,000

Boeing aircraft assembly plant

Boeing is designing new jetliners completely by computer, and the RS/6000 will play a major role

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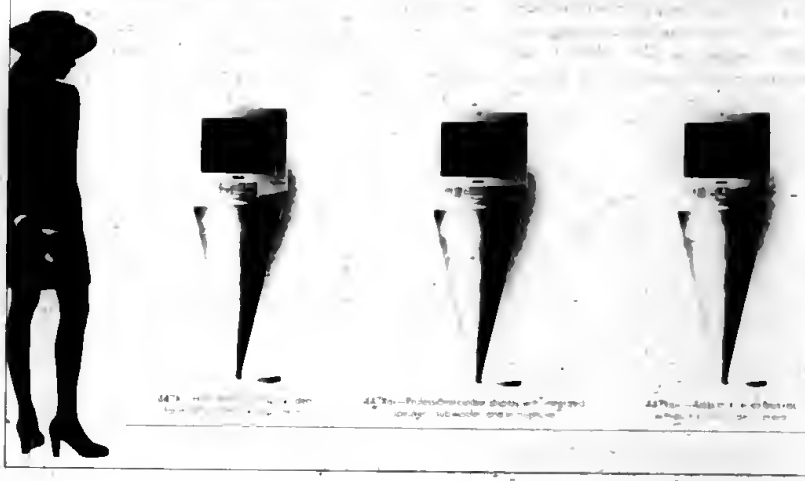

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SAP unveils R/3 for the mainframe

By Torsten Busse
MUNICH, GERMANY

SAP AG has certified IBM's System/390 mainframe as a database server for its R/3 enterprise resource planning system.

Users will be able to deploy the three-tiered R/3 system using IBM's AIX-based RS/6000 or Windows NT-based machines as application servers while using the System/390 platform and DB2 software as the database server.

SAP and IBM also plan to support R/3 application servers from other vendors in 1997, SAP officials said.

Following a 10-month joint-development effort, the R/3 Database Server for System/390 now will be tested by five pilot customers in the U.S. and Germany, including Amoco Corp., IBM PC Co., Lufthansa Systems GmbH, Motorola, Inc. and Carl Zeiss Jena GmbH, SAP said.

SAP and IBM expect to begin a controlled rollout of the database server to select customers in April, with general availability planned for mid-1997, SAP officials said.

DATABASE SERVER

SAP in Walldorf, Germany, also touts the R/3 Database Server for System/390 as a database server for users of its R/3 mainframe system. This combination lets users leverage investments in mainframe hardware and data while exploiting the abilities of R/3's three-tiered Unix client/server architecture.

In initial testing, the combination of R/3 on System/390 will use the OS/390 operating system and DB2 running an SAP Sales & Distribution application. It supports more than 1,000 simultaneous users on a System/390 Parallel Enterprise Server Generation 2.

Busse writes for the IDG News Service in Munich.

Boeing to shift design to RS/6000

CONTINUED FROM PAGE 55

ments in the new Unix version of Catia, IBM's computer-aided design software, than in the mainframe version it now runs.

The move off the mainframe comes as Boeing works on new versions of the 737, competes tenously for a major defense fighter-jet contract and prepares for its proposed merger with competitor McDonnell Douglas Corp.

But switching to the RS/6000 will take time, especially because the mainframe version of Catia was central to the completely computer-generated design of the 777, the first plane designed in this fashion. Boeing began the 777 design in 1990, and it shipped in 1995.

"Users are used to the touch and feel of the mainframe applications, and we will be trying to maintain that touch and feel with a new Unix box," said Leland Wehland, director of Catia production at Boeing.

Add to this the complexity of designing an airplane completely on a computer before producing even one part. Boeing is making sure the workstations and the computer design process work well together before proceeding.

"It is currently considered to be more effort [to design via computer] than to do it manually. So we have an improvement process to allow us to do it faster [using computers]," Wehland said.

> In the next five years, Boeing will install 10,000 RS/6000 workstations that can carry the processing burden previously handled by mainframe systems.

Even though the time involved may be slightly longer when working totally on computers, engineers are designing and building new planes with more precise data, he said.

For example, the digital preassembly of the 777's 3 million parts cut back on change, error and rework time.

In the near future, new 737-600, -700 and -800 jetliners will be designed with help from engineers on the new RS/6000 workstations. Other plans include a stretch version of the 777, work on a jumbo jetliner and a demonstration version of Boeing's proposed Joint Strike Fighter for the Pentagon.

In the next five years, Boeing will install 10,000 RS/6000 workstations that can carry the processing burden previously handled by mainframe systems.

Boeing wants to eventually use Catia across multiple server platforms, such as those from Sun Microsystems Corp., Silicon Graphics, Inc. and Hewlett-Packard Co., Wehland said. But since some applications already run on the RS/6000, Boeing will start with that platform.

The mainframe won't be completely cut off from Boeing's design process.

During the long migration, it will still manage that process and will continue to be used for tasks such as overall data management after the move to workstations is complete, Klomp said.

Intel plans may be a while

CONTINUED FROM PAGE 55

ogy already built-in as they purchase new PCs.

But first, Intel says, improvements to dynamic RAM technology, which controls how PC processors talk to memory chip sets, will be necessary. DRAM's successor, Sync DRAM, will allow chips and chip sets to process 3-D images and video more efficiently.

The company, along with PC hardware makers including Compaq Computer Corp., Samsung Semiconductor, Inc. and Dell Computer Corp., plans to introduce 66- and 100-MHz Sync DRAM technology throughout 1997, 1998 and 1999.

Intel is working with Rambus, Inc. in Mountain View, Calif., a DRAM vendor, to further develop Sync DRAM technology, which is widely licensed.

But Intel's plans aren't reality yet, said Sherry Garber, senior vice president at Semico Research Corp., a consultancy in Phoenix. "This is Intel's view of where the market is going," she said. Garber said though videoconferencing is something the corporate market will be interested in, applications such as video E-mail are still difficult to run and a little "far-fetched."

A LITTLE DRAM'LL DO YA

Intel plans to improve video and 3-D technology by introducing Sync DRAM. Intel's three-year program calls for:

- **Introducing 66-MHz Sync DRAM chip technology in 1997**
- **Extending Sync DRAM to 100-MHz chip technology in 1997 and 1998**
- **Unveiling next-generation DRAM technology in 1999**

NEW PRODUCTS

SONY ELECTRONICS, INC. has announced StorStation, a tape drive, and the StorStation QW 2G-byte tape cartridge.

According to the Park Ridge, N.J., firm, StorStation was developed for the home and small-office user. It was designed to provide 10M byte/min. backup, the same as Travan-1 drives but at lower cost. Software for the hard drive is included.

The drive costs $199.95, and each 2G-byte cartridge costs $19.95.

Sony Electronics
(201) 930-1000
www.sony.com

THE LINKSYS GROUP, INC. has announced the EtherFast 2-Port 10/100 switch.

According to the Irvine, Calif., company, the Fast Ethernet switch is ready to run with all major network operating systems. It costs $399.

Linksys Group
(714) 261-8868
www.linksys.com

DELTEC ELECTRONICS CORP. has announced a line of modular online uninterruptible power systems (UPS) with hot-swappable batteries and an automatic bypass switch to prevent loads from crashing.

According to the San Diego company, the PowerWorks ET products use Cell Saver technology for increased battery life. They were designed to regulate power in a surge or sag situation without using the UPS batteries, saving battery backup time for power outages.

Pricing starts at $999.

Deltec Electronics
(619) 296-3039
www.deltecpower.com

INFORMATION ELECTRONICS has announced Eureka, a Simple Mail Transfer Protocol/Post Office Protocol server for Windows NT and Windows 95.

According to the St. Simons Island, Ga., company, Eureka treats every user account as a database. It was designed so that Unix algorithms aren't required.

Pricing is $2,000 for Eureka Platinum, an unlimited Internet connection server.

Information Electronics
(912) 638-1893
www.ie.com

MICRO DESIGN INTERNATIONAL, INC. has announced SE2600-SM, an optical jukebox for data storage.

According to the Winter Park, Fla., company, the product has a direct overwrite feature for fast write speeds.

Two drives can be included with the product, with 20 cartridge slots for a total of 52G bytes of storage capacity.

Pricing for the 52G-byte jukebox starts at $9,995.

Micro Design International
(407) 677-8333
www.mdi.com

KIWI COMPUTER, INC. has announced 150- and 166-MHz Pentium-based OpenNote notebook PCs.

According to the Santa Clara, Calif., company, the notebooks offer an easy upgrade path for system components and peripherals with more flexible configurations.

The 150-MHz model costs $3,599, and the 166-MHz costs $3,999.

Kiwi Computer
(408) 492-9188
www.kiwicom.com

Software

Client/Server • Development • Operating Systems

Briefs

Data-caching for Web

Microsoft Corp. in Redmond, Wash., is shipping data-caching software that will provide temporary local storage for its Internet Explorer World Wide Web browsers. The Advanced Data Connector (ADC) software lets Internet-based end users query and update Microsoft's SQL Server databases without having a constant database link. Other relational databases that conform to the Open Database Connectivity specifications initially will be supported only for querying. Microsoft officials said. ADC is available for free downloading from Microsoft's Web site at: www.microsoft.com.

Year 2000 testing tool

Princeton Softech, Inc. in Princeton, N.J., has added a year 2000 testing module to its Relational Tools 2.5 for DB2/MVS software. Test 2000 lets users test reprogrammed code with year 2000 dates; users don't have to hunt through databases to find actual date fields with the new dates for testing. Pricing for Relational Tools 2.5 for DB2/MVS starts at $64,000.

Gentia to support API

Planning Sciences International, Inc. in Westboro, Mass., said support for a common application programming interface announced in September by the OLAP Council will be built into its Gentia online analytical processing (OLAP) software in the first quarter 1997.

NCR guarantees it

NCR Corp. has announced an integrated product that guarantees contractually specified levels of availability for PeopleSoft, Inc.'s enterprise applications. NCR officials said the company will guarantee that its High Availability Integrated Offer will have less than nine hours of downtime in a year. The offer is available on PeopleSoft's Human Resource Management Software, Informix's relational database management system and NCR's systems management software for WorldMark servers.

Struggling Sybase finally goes to Web

By Craig Stedman

SYBASE, INC. is trying to get with the ways of the Web.

The struggling database vendor has been conspicuously circumspect about the Internet, especially compared with rivals such as Oracle Corp. and Informix Software, Inc.

But Sybase officials said a series of World Wide Web products should finally come together as 1997 unfolds.

Those were welcome words to some Sybase users who said the company needs to get more in step with the times if it wants to erase the stains left by three straight quarterly losses.

The problems have resulted in Sybase losing far more customers to its competitors than it is taking from them, according to a survey by the Computerworld Information Management Group (CW, Dec. 16).

Sybase, page 58

ALL BUNDLED UP

Sybase's SQL Server Professional Edition includes these tools:

Tool	Function
NetImpact Dynamo	Development of Web sites that store content in databases
SQL Modeler	Utilities for modeling and documenting databases
SQL Central	Graphical administration of databases and Web sites
InfoMaker 5.0	Database query and reporting tool

Pricing for Windows NT

Per seat	$995 per server plus $195 for each user
Concurrent	$3,595 for eight users to $34,995 for an unlimited license

Bloomberg TV's worldwide video uses StarWorks for Solaris

Bloomberg TV has digital take

▶ *StarWorks software improves video processing*

By Matt Hamblen

AT BLOOMBERG TV, financial news gets shown and updated continuously around the world. But all that video isn't stored on videotape.

Instead, it is kept on Sun Solaris digital networking servers in New York, Tokyo and London and accessed with StarWorks software by Starlight Networks, Inc. in Mountain View, Calif.

News is then sent by satellite around the world, and ends up on radio and television stations such as USA Network that are viewed by millions of people each day.

Bloomberg TV, a subsidiary of Bloomberg LP in New York, has used the software for two years on its Sun Microsystems, Inc. servers. The company soon will upgrade with StarWorks 3.0, which was released in early December, for higher quality and speed, Bloomberg officials said.

"Bloomberg exercises the StarWorks system very vigorously," said Jonathan Fram, general manager at Bloomberg TV.

"We evaluated a number of products, and Starlight was the only one that could deliver the throughput in a wide-area network on a reliable basis," Fram said.

At least twice an hour, segments of the Bloomberg news production are updated, stored

Bloomberg, page 58

INTERNET MIDDLEWARE

SCO links legacy apps to Java-enabled clients

By Jaikumar Vijayan

SCO, INC. has announced software technology that enables applications that run on Unix servers and mainframes to run unchanged on any Java client.

The Tarantella technology gives Java clients that run World Wide Web browsers access to graphical X applications and character-based Unix applications across the Internet.

Users can access existing and legacy applications via a number of Java-enabled devices — including network computers, PCs and handheld devices such as personal digital assistants — without having to rewrite a line of code.

Most older applications usually weren't designed to be viewed from Web browsers because they aren't based on Hypertext Markup Language.

SCO TARANTELLA

What it does: Allows Unix server and mainframe-class applications to run on Java-compatible browsers.

What that means for users: Existing server and mainframe applications can be accessed from a wide variety of Java clients, leaving the application unchanged.

Clients supported: Java-compatible Windows PCs, Macintoshes and network computing devices.

A GOOD MIX

"This kind of software basically marries Internet technologies with existing client/server technology," said Jean Bozman, a Windows NT/Unix analyst at International Data Corp. in Mountain View, Calif. "It is essentially middleware that users can layer on top of their existing application," to make them Internet-enabled, she said.

"The primary use as I see it right now is to protect some of the legacy applications I have developed," said Barry Berndsen, director of store systems at Ritz Camera Centers in Beltville, Md. The company currently uses a mix of old character-based applications with newer server-centric ones.

"Tarantella allows me to merge the technologies and protect the investment I have," on some older character-based ap-

SCO, page 58

FRANKLY SPEAKING

Find out if you're ready for '97

FRANK HAYES

READY FOR 1997? Squeezed between the year 2000 rock and a hard place called the Internet, some corporate software developers aren't exactly eager to face the new year.

Here's a chance to test your '97 knowledge — and find out how ready you're not.

■Year 2000 projects will reach the following stage in 1997: (a) analysis; (b) completion; (c) triage; (d) early retirement.

Answer: (c). This is the year developers will realize they can't fix all their bad code and must choose which programs will survive and which will crash when the century's odometer clicks over. Early retirement will work, too — but only for programmers, not projects.

■This vendor will define how Web-based applications are built in 1997: (a) Netscape, (b) Microsoft; (c) IBM; (d) Sun Microsystems' JavaSoft; (e) a thousand little companies you never heard of before.

Answer: (e), and nobody else is happy about depending on companies that didn't exist six months ago, either. But with rapid improvements in the technology and in your staff's expertise, you'll probably run through new tools like Kleenex — so you won't even notice when some vendors go belly-up.

■The wonder kids of corporate software development, who can get whatever price they demand in 1997, will be experts in: (a) Cobol; (b) C++, (c) Java, (d) blackmail.

Answer: (a). Year 2000, remember? True Cobol wizards will be golden for the next four years. But when the crisis is over, highly automated Cobol maintenance tools may kill the demand for Cobol skills forever.

■In 1997, client/server development will be: (a) replaced by the Internet; (b) supplanted by the Internet; (c) eliminated by the Internet; (d) bigger than ever.

Answer: (d). Even if it uses the Internet, client/server is still client/server. And for visual client/server tool sets such as PowerBuilder and Delphi, the Web is just another front-end platform.

■The most important language for Web application development in 1997 will be: (a) Java; (b) HTML; (c) C++; (d) plain English.

Answer: (d). Fancy-schmancy applications decorated with Java and ActiveX components aren't much good if they aren't clear to users.

■In 1997, Microsoft will effectively torpedo the corporate use of: (a) Java; (b) Cobol; (c) C++; (d) plain English.

Answer: (c). The new compiler in Visual Basic 5.0 will wipe out C++'s speed advantage over Visual Basic — the last reason to choose C++.

■A smart developer's new best friends in 1997 will be: (a) network management gurus; (b) mainframe operations experts; (c) Web consultants with purple hair; (d) Web consultants with green hair.

Answer: (b), and make sure that your green- and purple-haired consultants make friends with them, too. Traditional large-system problems such as performance management and data security are hot-button issues that Internet developers need to learn fast — and mainframers already know inside and out.

■The following will be pushed as standards in 1997: (a) Windows; (b) Java; (c) ActiveX; (d) all three, but no one will care.

Answer: (d). Hey, they're already standards. Besides, with the glacial pace of formal standards committees, nothing will become official for two or three years — when we're all panicking about the year 2000.

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

COMPUTERWORLD

Microsoft Corp. plans to announce on March 19 a system that would let programmers use multiple languages and tools to build applications within a single environment. What benefits and drawbacks do you see to this? Participate in our QuickPoll at www.computerworld.com.

SCO links legacy apps

CONTINUED FROM PAGE 57

plications, Berndsen said.

SCO's Tarantella technology will result in several products slated for release throughout 1997, according to SCO.

The software comprises the following components:

■An Advanced Adaptive Protocol that optimizes transfer of information to Java clients. The protocol adapts to the bandwidth of a communications medium and optimizes performance according to the type of application and device. If a user is trying to access legacy applications via a handheld device, the protocol recognizes the hardware and makes sure the data is viewed in a manner best suited for the device.

■A management interface that will let systems administrators control applications and data to different clients and workgroups in an enterprise.

■A Vision Resume capability that will let users disconnect from a network, change device types and then reconnect to the network without having to shut down or restart applications.

The Tarantella announcement is part of a broad initiative by SCO to Web-enable its operating system and systems management products.

For instance, the company last week also announced that every copy of SCO UnixWare, SCO Internet FastStart and SCO OpenServer products will now also include the SCO ToolWare CD.

This is a suite of SCO and third-party tools for application development and systems management functions for Internet and intranet applications.

Bloomberg TV goes digital

CONTINUED FROM PAGE 57

and accessed for broadcast at each hub location, Bloomberg officials said. Digital video storage allows Bloomberg to use smaller technical teams and fewer anchors to produce news segments, and there is less videotape to manage and file.

DIGITAL VIDEO

StarWorks allows multiple digitized news segments to be stored and retrieved at the same time over a standard Ethernet network. Television-quality video of 30 frame/sec. can be provided. StarWorks 3.0 provides recording and playback of a video stream at speeds up to 200 M bit/sec.

At Bloomberg TV, StarWorks has made it possible to reduce the number of jobs that would have been required under conventional videotape format methods. For example, using digital video servers, one news segment can be stored and retrieved, with new graphics added to a later version, much faster than it would take a person to manually track down an old videotape before adding the new graphics content for broadcast.

"Without Starlight, you'd do it in a conventional way, and the economics of that would be questionable. You'd have to offset the [lack of] automation with more people," Fram said.

Several companies sell video networking software, but Starlight Networks has done it the longest — since 1992 — and knows the business the best, said Cheryl Ball, director of research at Business Research Group in Newton, Mass.

Starlight's competitors include Sun, Digital Equipment Corp., Hewlett-Packard Co., Oracle Corp. and IBM. But they haven't shown the working knowledge of networks that Starlight has, Ball said.

Sybase finally turns to Web

CONTINUED FROM PAGE 57

"A Web architecture is unavoidable [for vendors]. That's how you get attention these days," said Alan Levine, director of information services at McCarter Theatre in Princeton, N.J. The theater, which houses 11 arts organizations, runs its ticketing system on Sybase's SQL Server database and plans to Web-enable the application in 1997, Levine said.

UPCOMING PRODUCTS

Sybase started its Internet crusade Dec. 16 by releasing a bundle that combines the Windows NT version of SQL Server with Web development software and other tools (see box).

The company also plans to announce the following products in the coming months, although it didn't specify shipment dates:

■Unix versions of the SQL Server/tools bundle.

■A Web application server, code-named Jaguar, that Sybase said will run transactions against SQL Server and non-Sybase databases.

■A release of Sybase's Omni-Connect middleware that links Java applets to multiple databases while providing a single view to end users.

■Adaptive Server, a SQL Server offshoot that will support objects and multimedia data.

Sybase has pushed its Powersoft Corp. development tools and SQL Anywhere mobile database for use in Web applications, said Eric Michie, a consultant who is implementing SQL Server at Nutraceutical Corp. in Park City, Utah. "But we haven't heard a whole lot out of Sybase" related to the Internet and SQL Server, he said.

Nutraceutical, a maker of vitamins and other health-food supplements, expects to use the new SQL Server Professional Edition for Windows NT to develop Web-based shipment tracking and order-entry applications, Michie said.

He said Sybase's NetImpact Dynamo database development tool looks to be "much more powerful and user-friendly" than a seven-month-old product called Web.sql, which required that developers write Common Gateway Interface (CGI) scripts.

NetImpact Dynamo's support for the JavaScript language makes it "a huge leap forward" over Web.sql, said David Henry, a developer at Collaborative Medical Systems in Waltham, Mass. "Java is the future, and CGI is the past. That's a pretty easy call for anybody," he said.

The Enterprise Network

LANs • WANs • Network Management

Briefs

Fax? E-mail? Whatever

Inocor in Santa Monica, Calif., and Topcall, a Vienna-based maker of communications software, this month will ship software for exchanging documents as faxes or electronic-mail messages over the Internet. TC-FLEX is a Windows NT-based application that runs on Topcall's message and fax server and incorporates Inocor's message server technology. Pricing ranges from $25,000 to $300,000, depending on the number of messages sent.

NetSoft bundle

NetSoft, Inc. in Irvine, Calif., has bundled its PC-based mainframe and AS/400 access software into one package: Portfolio Enterprise. The $995 bundle includes Portfolio Manager, which provides all client distribution and remote support from one administration station.

Digital ships directory

Digital Equipment Corp. in Maynard, Mass., is shipping Alta Vista Directory '97, a directory application for Windows NT servers. The software includes phonetic search capabilities and can be accessed from World Wide Web browsers or E-mail clients that support either Messaging Application Programming Interface or Lightweight Directory Access Protocol. Pricing ranges from $495 to $9,995.

WORLDWIDE CLIENT/SERVER E-MAIL BOXES

	Installed base	Market share
Lotus Notes	7.5M	49.5%
Soft Arc FirstClass	4.9M	32.3%
HP OpenMail	2M	13.2%
Microsoft Exchange Server	750,000	5%

Total client/server mailboxes: 15.2 million

Source: Enterprise Mail and Messaging Systems, Washington

Thinking globally

▸ *Ascom's Multinational Program helps firms set up foreign branches*

By Laura DiDio

GOING GLOBAL CAN mean going crazy for businesses that don't prepare in advance when they establish a company presence outside the U.S.

The Multinational Program, a new service from Ascom Timeplex, Inc. in Woodcliff Lake, N.J., helps companies sidestep potential stumbling blocks as they set up offices abroad.

Bruce Bennett

The service lets customers outsource all the tasks involved in setting up an entire division or remote office in a foreign country. Benefits include quicker network installation and an order-tracking system that provides the latest information on product delivery and availability.

The Multinational Program gives customers such as telecommunications vendor Saturn Global Network, Inc. a single point of contact that addresses complex issues unique to multinational network implementations. The Ascom Timeplex Multinational Program helped Saturn Global sort out problems with local power, telecommunications standards, import and export documentation and guidelines.

Thinking globally, page 63

GM revs up data delivery to dealers

By Bob Wallace

WHAT'S GOOD FOR GM could be good for any firm looking to reduce the information delivery cycle to legions of far-flung sites.

General Motors Corp. is using an emerging technology called IP Multicasting to cut up to eight weeks off the time it takes to get information to its thousands of dealerships.

IP Multicasting, which broadcasts data from one main site to multiple receiving stations, is more efficient than creating an individual link from the central site to every remote location.

"We went from transmitting a 1M-byte file to a very limited number of dealers in roughly 30 minutes to sending that same file to 500 dealers in three minutes," said Wayne Stein, a project manager at Electronic Data Systems Corp., which has

GM, page 61

• 56K bit/sec. expected in 1997

Faster modems ready, but support is lacking

By Mindy Blodgett

THE NEW YEAR will bring several new technologies, including one that Internet surfers, remote users and telecommuters have been salivating over: 56K bit/sec. modems.

The modems, which will work with standard telephone lines, are expected to offer transmission at almost twice the speed of the 28.8K and 33.6K bit/sec. modems on the market.

Industry observers said the modems are a promising technology that will at least serve as an interim technology until Integrated Services Digital Network (ISDN) and faster cable modems make it to market.

The 56K bit/sec. modems would save money and raise productivity on the faster connection times, the observers said.

But questions about the technology are being raised, even before products hit the market.

"On paper, this technology theoretically holds great promise, especially for those who want to

Faster modems, page 67

International Data Corp. estimates there are 500,000 ISDN lines installed nationwide and 4.5 million ISDN lines will be installed nationwide by 2000

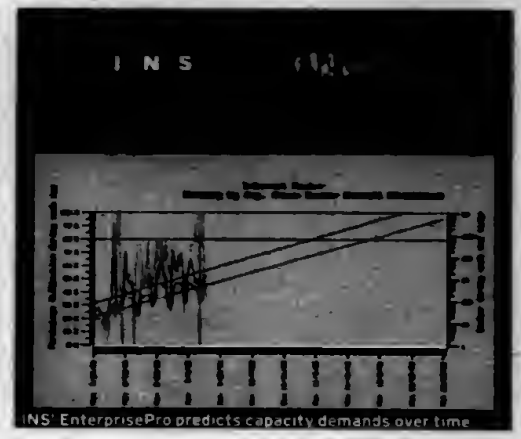
Services monitor nets

By Patrick Dryden

TWO SERVICE PROVIDERS now specialize in monitoring network performance as a way to provide information systems managers with nuggets of data they may not have the time, staff or expertise to mine for themselves.

Both services place a data-gathering PC on customers' networks and tap the wealth of statistics buried within internetworking devices. This makes

Services, page 65



INS' EnterprisePro predicts capacity demands over time

'97

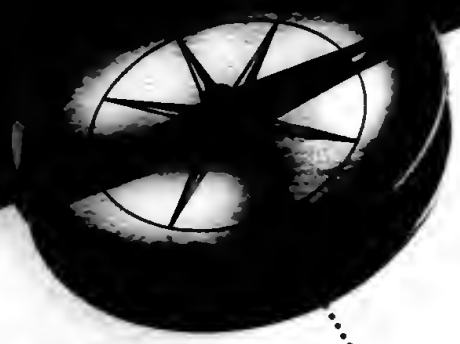
NAVIGATE

THE CHANGES

IN TODAY'S

ENTERPRISE

NETWORK



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Get your hands on new tools and technologies at the beginning of the year. Test-drive the products you've been hearing about to see how they'll work in your organization. Meet the leaders and innovators of the latest enterprise networking advances. This is your chance to ask questions, get technical advice, and solve your toughest problems on the spot. Put the power of the ComNet exhibit floor to work for you!

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- Fast LANs and Switching
- Remote Access and Mobile Workers
- Network/Systems Management
- Internet/Intranet Issues
- Policy and Deregulation
- Federal Forums
- Technology Primers
- You-Asked-For-It!

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THIS IS NOT A REGISTRATION FORM.

GM dealers rev up data delivery

CONTINUED FROM PAGE 59

long handled technology implementation and integration for GM.

IP Multicasting lets GM provide dealerships with timely software updates, sales incentive data, service bulletins and car availability information. In the past, this was done by numerous point-to-point transfers or by mailing diskettes to dealerships.

The retail, fast food and oil and gas industries could benefit from one-to-many information delivery.

"The auto industry has been the worst in terms of implementing useful new technologies," said Spencer Hondros, owner of Villa Marin Pontiac-Buick-GMC in Staten Island, N.Y. "We would submit questions and inquiries to GM via voice mail or letters, and the lag time would be two or three days. Now, we get responses the same day, with the ability there to get them in hours.

"We get the latest software updates, information on sales incentives and maintenance information 'automagically,'" Hondros said. "And what's good for me is really good for my customers."

Hondros' sales staff can now provide prospective car buyers with up-to-date information on product availability and delivery, and his service staff can repair cars quicker by getting their technical questions answered faster.

NO LEARNING CURVE

And IP Multicasting doesn't require dealers to learn new skills.

"We want auto dealerships to have the latest available information to ensure customer satisfaction, but dealers are not technical people. Their job is to fix and sell cars, not load software," Stein said.

GM uses IP Multicasting software from Concord, Mass.-based StarBurst Communications to broadcast critical data to dealers from its Auburn Hills, Mich., headquarters over a VSAT network that was built in the 1980s. All 8,500 GM dealerships nationwide are scheduled to be online by September 1997. Hondros' dealership was a beta site for what analysts call an innovative project.

SUPPORTING SYSTEMS

To get started, the operating systems used at the sending site and receiving locations must support IP Multicasting. Some of these operating systems include Windows 95, Windows NT and OS/2.

Users then install IP Multicasting software at the sending and receiving sites. Remote sites become part of the multicast group and receive all data transmitted. Internetworking hardware, which must also support the service, then replicates data that is broadcast for delivery to end stations.

"GM is among the very first companies to put this time and bandwidth-saving technology to use," said John Morency, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass. "They've certainly attained solid and quantifiable business benefits that others can realize."

Hondros agreed. "The old process was labor-intensive, and there was the chance you'd get bad diskettes," he said.

NEW PRODUCTS

ILOG, INC. has announced Visualization Suite (VS), graphics libraries for creating C++ and ActiveX application interfaces.

According to the Mountain View, Calif., company, ILOG VS includes InForm, Vision and MultiViewer for building data-intensive graphics applications, high-performance, three-dimensional scenes and interactive applications. The products also help coordinate multipanel displays.

Each product in ILOG VS is priced separately, starting at $5,000 per developer.

ILOG
(415) 390-9000
www.ilog.com

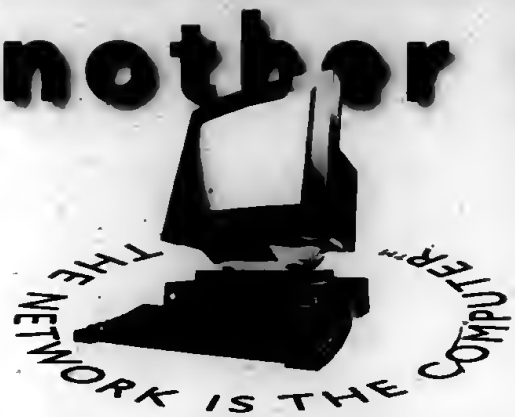
PASSPORT CORP. has announced Passport IntRprise to allow application developers to build applications that use Java for Internet and intranet deployment yet support transaction processing.

According to the Paramus, N.J., company, IntRprise can deliver high-availability transaction processing in the event of a system failure to allow a restart of an application. The product supports Windows 3.1, Windows NT, Windows 95, all Unix versions, network computers and Java.

Pricing starts at $8,995.

Passport
(201) 634-1100
www.passport4gl.com

Your people will be so productive, you'll get to keep your job for another week



Sun microsystems

Sure, reaching goals means taking chances.

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Ascom Timeplex thinks globally

CONTINUED FROM PAGE 59

"I essentially handed them all my headaches and said, 'You deal with it.' And that's exactly what Ascom Timeplex's Multinational Program did for us," said John Polonez, Saturn Global's general manager for North America.

London-based Saturn Global is an international value-added network provider of managed data and telecommunications services for mainly financial trading firms.

Saturn Global's enterprise network spans 15 countries, 35 cities and requires about 60 network support specialists to track the 700 point-to-point data lines, multiport lines and leased lines.

RUNNING THE SHOW

Although each regional office retains its autonomy, orders for equipment, installation and technical service and support are coordinated by the Ascom Timeplex Multinational Program offices worldwide.

"Things run much more smoothly now," Polonez said. "The right hand always knows what the left is doing. We've speeded up network delivery, installation and project turnaround time by 25%."

REDUCED COSTS

According to Alan Montey, assistant general manager at Mitsui and Co. USA in New York, Ascom's Multinational Program has enabled his company to cut through the international red tape and navigate through the maze of an individual country's import/export regulations. This ensures that all of the company's networking equipment complies with the technology standards and laws of a particular country.

Ascom also provided Mitsui and Saturn Global with complete network designs, installation and maintenance.

Another added benefit for Saturn and Mitsui is that Ascom Timeplex recruits its Multinational Program workers from the individual countries. Not only are they intimately acquainted with all of the import/export laws and technology standards, but they also handle the sometimes tricky monetary conversions.

"They make sure we don't get gypped or overpay for anything. They total the exact costs so there are no surprises," Polonez said.

"They always made sure the right equipment was shipped along with the proper customs and documentation and that it arrived on time. And that makes for very sound business practices in anybody's language," Montey said.

Pricing for the service ranges between $5,000 and $20,000 per location, depending on the type and volume of network traffic, location of the sites and level of service, a spokesperson for Ascom Timeplex said.

Lotus improves Notes imaging

By Barb Cole

LOTUS DEVELOPMENT CORP. last week shipped updated imaging software for Notes that runs on 32-bit clients and works with the company's just-released Domino 4.5 server.

Lotus Notes: Document Imaging Professional Edition (LN:DI Pro) 4.5 is an add-on to the Notes client that lets users create images and incorporate them into Notes applications. The company bundles Lotus Image Viewer with its Windows-based Notes clients to let end users view the files.

IMAGING SOFTWARE

Although LN:DI Pro 4.5 works with Domino, users will have to wait for a future release to exploit Domino's Web features. Eventually, Lotus is expected to transform LN:DI into a World Wide Web-compatible component, possibly by rewriting it as a Java applet. This would mean that users could incorporate paper-based documents into Web applications using LN:DI.

The focus of the $89 LN:DI 4.5 Pro release is the addition of 32-bit platforms, but its usability is also improved, according to beta testers.

"This release is a lot better for users because it lets them do in-place editing [of images]," said Michael McGhee, director of administrative computing at the University of Nevada, Las Vegas. The university runs more than 1,000 Notes seats and uses LN:DI to scan and edit images as part of several student records applications. McGhee added that some compatibility issues between the university's scanners and earlier versions of LN:DI have been remedied.

The new release also has hooks to NotesFlow, which lets users control the routing of scanned documents from LN:DI. Other enhancements include built-in optical character recognition, new annotation tools and improved security.

LN:DI Pro 4.5 runs on Windows 95 and Windows NT and requires a Notes client.

Gives PC users severe cases of workstation envy

Sun

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Expersoft's Enterprise Application Deployments

Customer	Application Type	# Clients	# Servers
Allstate Insurance	Insurance Claims	70	3
British Telecom	Network Failure Detection	1 with 1 million transactions/year	1
Canadian Imperial Bank of Commerce	Derivatives Trading	250	250
Delta Airlines/TransQuest	Operational Control	400	40
Hewlett Packard	Industrial Control	55	23
Lucent	Network Management	200	15
NationsBank	Direct Banking	80	4
National Australia Bank	Foreign Exchange	80	6
A Premier Investment Bank	Fixed Income	1000	500
Sapient	Network Trafficking	280	5
Universal Oil Products	Refinery Design	450	2

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Services monitor nets

CONTINUED FROM PAGE 59

previously inaccessible performance data available anywhere via a World Wide Web browser. That information allows IS managers to track trends over time so they can recognize emerging bottlenecks, predict the impact of new applications and plan future capacity needs.

International Network Services, Inc. (INS) in Sunnyvale, Calif., last week announced it simplified its EnterprisePro reports and developed a better way to examine major vendors' gear.

"Without INS, we would be driving in the dark," said Mike Jakee, a network services consultant at insurer USAA in San Antonio, Texas.

Some reports were unwieldy, Jakee said, but with the new version, INS provides better summaries, vendor-specific data and helpful query capabilities. For example, managers can dig down through a daily summary to discover bottlenecks from a busy server segment or overloaded backbone, Jakee said. And a new capacity planner automatically predicts performance trends.

But Jakee said he can't massage raw data himself to examine resource utilization from new perspectives. That's because INS uses a proprietary data format that is efficient but not open to competing tools.

NDI'S SERVICE

Network Defenders, Inc. (NDI) in Marlboro, Mass., recently launched a similar service called ProVision.

Long's Drug Stores of California, Inc. opted for ProVision because tooling up to provide a comparable level of monitoring for the 335-store chain "would have taken us quite a long time, and that task is not for the faint of heart," said Dave Klinzman, director of network services at the Walnut Creek, Calif.-based retailer.

Both NDI and INS warehouse the historical performance information and interpret it for customers. Monitoring a 100-device network costs about $30,000 per year.

Some IS groups track network performance themselves with tools that cost just about as much. Those are available from vendors such as Concord Communications, Inc., DeskTalk Systems, Inc. and newcomer Kaspia Systems, Inc.

But according to surveys by The Yankee Group in Boston, "saving time motivates more users than saving dollars," said Jennifer Pigg, an analyst at the consultancy.

Typically, network managers are "swamped by a wide variety of fire fighting problems," Pigg said. So this task "always filters to the bottom of the priority list even though the information can help them tremendously," she said.

Users may want to have someone else do elements of their job that are infrequent and require a specific skills set, but they may be leery of INS and NDI, Pigg said. Just as other consultants and integrators offer one-shot analysis just to get their foot in the door, INS and NDI provide ongoing monitoring to sell design and implementation services.

EASY ADAPTION

INS took over network performance monitoring at USAA after a reorganization left no one IS group responsible for the task, Jakee said. "They provided valuable reports almost immediately, without us having to acquire equipment or generate software or learn anything complex," he said.

NDI's ProVision differs somewhat by letting managers create their own views of historical data from 32-bit Windows consoles anywhere in the network.

Klinzman said he would like ProVision to predict network behavior with what-if modeling capability. But the real problem with the service originates from its freely accessible Web-based reports, he noted, because executives "watch over my shoulder" to keep an eye on network performance from their browsers.

SHORT

E-mail suite includes Java

Infonet Software Solutions is shipping Messenger Workplace server, a suite that includes a message store, mail switch, directory services and network management software.

The Vancouver, B.C.-based firm also announced an add-on for the suite called Messenger JavaTracker. The Java applet lets users track the status of E-mail messages from any Java-enabled browser.

Pricing for Messenger Workplace server starts at $9,995 and includes virus-checking support for 100 users.

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Faster modems ready

CONTINUED FROM PAGE 59

get faster speeds but who can't or don't want to commit to ISDN," said Sanjay Mewada, an analyst at The Yankee Group in Boston.

However, Mewada said issues such as questionable interoperability and a lack of standards among modem manufacturers loom.

"Without standards, these products will not truly be plug and play," Mewada said. "And can these modems really deliver the speeds they are promising? A lot will depend on the telephone companies' ability to support these new modems."

Phone companies — including Southern New England Telephone — are conducting trials with the technology. To optimize the modems, the telephone companies need to make several changes, including implementing the technology in central offices and reconditioning the lines to remove noise and latency — the lag time in data transmissions.

The technology currently will work only "downstream" — allowing the user to download information from the Internet at 56K bit/sec. but not to send. On the upstream, users get 33.6K bit/sec. speeds.

GOOD IF IT WORKS

Al Watrud, manager of telecommunications at CUNA Mutual Group in Madison, Wis., raised many questions as well. He said his company has explored many solutions, including ISDN, to allow the company's 5,000 employees nationwide to communicate.

"If you can truly get 56K technology for a reasonable price, it might well be worth it," Watrud said. "A lot of people will be interested because of the availability. And if [the modems] run across voice circuits, then it will be a good solution.

"But I wonder: Will the phone companies truly support this technology?" Watrud added. "We'll probably kick the tires on these products when they come out because once people hear about them, they will want them."

IN THE WORKS

The following are some of the recent 56K bit/sec. announcements:

■HarvardNet, a Boston-based Internet service provider, has announced Personal 56K, a service that uses the new technology. Although 56K bit/sec. modems aren't yet available, users with standard modems will get faster performance because of more robust connections, according to HarvardNet.

■Logicode Technologies, Inc. in Camarillo, Calif., earlier this month announced a 56K bit/sec. modem. Versions of its Quicktel and Quicktel II modems will ship Jan. 15. Pricing isn't available yet.

■Creative Labs, Inc. in New York earlier this month said it is developing 56K bit/sec. modems and videoconferencing products with Rockwell International Corp.

NEW PRODUCTS

NETWORK INSTRUMENTS has announced Winsock Companion 3.1, a suite of utilities and emulations for helping users connect Windows environments to Unix.

According to the Minneapolis company, Winsock Companion provides 32- and 16-bit connectivity for Windows 95 and Windows NT. The latest version includes complete VT series emulations.

Pricing starts at $69.

Network Instruments
(612) 932-9899
www.netinst.com

ADVANCED SYSTEMS CONCEPTS, INC. has announced XLNT (extended language for Windows NT and Windows 95), a scripting language and command shell for describing, testing and implementing repetitive tasks.

According to the Hoboken, N.J., company, XLNT was designed to perform such tasks without having to rely on traditional programming languages and development tools. It can be used for jobs such as batch job access, secure remote log-in, registry accessibility and file and directory handling.

XLNT costs $149 for a single license.

Advanced Systems Concepts
(201) 798-6400
www.advsyscon.com

WILSON WINDOWWARE, INC. has announced WinBatch 96G, a complete programming language for automating all PC operations with enhancements for Internet support, network functions and a new help system.

According to the Seattle company, WinBatch 96G includes 32-bit software for Windows NT and Windows 95 and 16-bit software for Windows 3.1 to automate and control every Windows operation across networks.

Pricing starts at $99.95. A WinBatch/compiler package sells for $495.

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WorldCom upgrade boosts frame relay

▸ *With enhancements, long-distance carrier offers new and faster services*

By Kim Girard

LDDS WORLDCOM, INC. is upgrading its nationwide frame-relay network, which will allow the long-distance carrier to offer customers higher-speed frame relay and simplified frame-relay-to-ATM migration.

WorldCom in Jackson, Miss., plans to boost its backbone to 622M bit/sec. with 27 CBX 500 Asynchronous Transfer Mode (ATM) switches from Cascade Communications Corp. in Westford, Mass.

WorldCom will add these switches, which can handle frame-relay and ATM traffic, to the existing 70 switches on the company's frame-relay network.

With more bandwidth, long-distance carrier WorldCom will be able to deploy higher-speed services faster, said Liza Henderson, a broadband analyst at TeleChoice, Inc., a consultancy in Verona, N.J.

WorldCom will have enough capacity on the network to provision higher speeds without having to add new trunks or equipment, she said.

Specifically, the upgrade will allow WorldCom to offer services to customers who demand frame-relay speeds above 1.54M bit/sec., but aren't ready to implement higher-speed ATM, a packet-switching technique that transmits cells of voice, video or data.

LDDS WORLDCOM RANKING

Frame-relay market share for 1996

AT&T	37.5%
MCI	19%
Sprint	17.5%
WorldCom	8.4%

SPEEDIER NETWORK

WorldCom customer Jim Fey, director of strategic technology at PMI Mortgage Insurance Co. in San Francisco, said his company doesn't require frame-relay speeds of more than 1.54M bit/sec.

But overall, a faster network will mean fewer dropped data packets because of the faster throughput, he said. The upgrade also will ease the transition to ATM for many customers, he said.

WorldCom's news comes on the heels of several other recent upgrade announcements that were driven primarily by increasing Internet traffic. Sprint Corp. plans to triple the bandwidth of its Internet backbone to 155M bit/sec., about two months after MCI Communications Corp. upgraded its network to 622M bit/sec.

Speeds of 155M bit/sec. for ATM users should be available by the first quarter next year, said Robert Bentley, manager of data engineering at WorldCom.

ATM speeds range from 1.54M bit/sec. to 622M bit/sec. on the LAN and 45M bit/sec. to 622M bit/sec. on the WAN.

With the upgrade, WorldCom can offer additional bandwidth to Internet service providers, Bentley said. He said UUNet Technologies, Inc. has already ordered 20 new nodes to keep pace with the Internet's growth.

UUNet is a subsidiary of MFS Communications, Inc. MFS and WorldCom have a merger pending.

SHOWING BACKBONE

Details of LDDS WorldCom switch upgrade:

- 622M bit/sec. ATM backbone
- 27 CBX 500 ATM switches from Cascade Communications to offer a wider variety of ATM services to customers
- Easier customer migration from frame relay to ATM, shorter service setup times and new services, including ATM at 155M bit/sec. by the first quarter 1997

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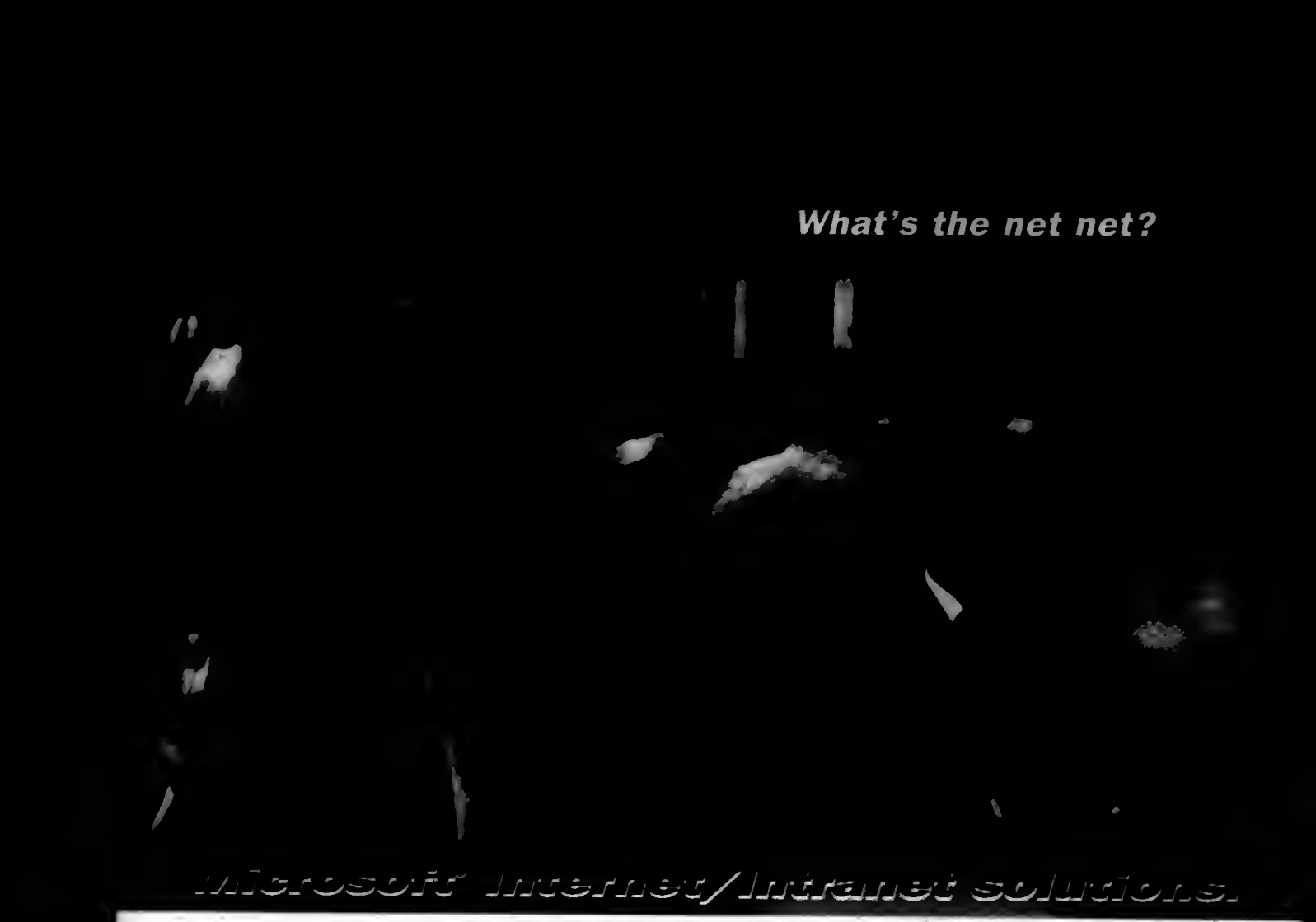

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Network monitor expands view

▸ *Kaspia software upgrade adds systems management features*

By Patrick Dryden

START-UP KASPIA SYSTEMS, Inc. last week added systems management functions to its namesake network monitoring software to distinguish the package from better-known tools.

Version 1.1 of Kaspia Monitoring System includes inventory and change reports so network managers can track their internetworking devices, PCs, servers and some altered configurations.

The reports, which can be viewed with standard World Wide Web browsers, summarize information that the package's automated monitor collects by polling hubs, routers, switches, servers and stations. The monitoring system can provide a quick health check of the bandwidth utilization on a network segment and identify vendor and version numbers for components.

The goal is to help information systems managers perform multiple jobs with one package instead of many.

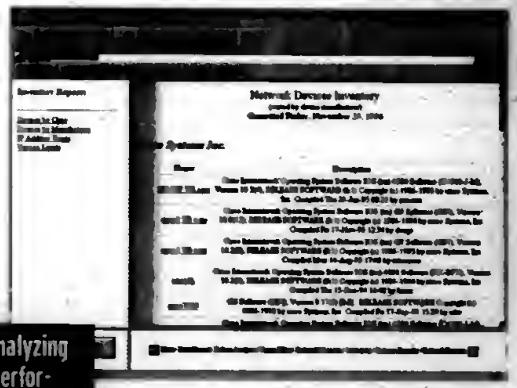
The new version's reports proved invaluable to at least one integrator. He was in charge of the network that linked hundreds of exhibitors at Comdex/Fall '96 last month in Las Vegas.

Instead of "walking the show floor to see what devices exhibitors were hooking up to the network," the setup and management crew could check Kaspia's reports through a browser, said Bill McCauley, director of network engineering at GeoNet Communications, Inc. in Redwood City, Calif.

SEEKING MORE

Like established network performance analysis tools, Kaspia Monitoring System extracts data — such as port traffic measurements — that is stored within devices in standard and vendor-specific formats. But apparently some managers wanted more.

The 95 organizations that have bought or are evaluating the Kaspia Monitoring System — which shipped in August — inspired the shift in this direction, according to Jeff Erwin, president and CEO of the Beaverton, Ore., company.



Besides analyzing network performance, Kaspia's updated tools can track inventory and changes.

Because the tool's database already held such information, network managers wanted reports that track location and contents of devices and can group gear by vendor, Erwin said.

For example, now they can sort routers from Cisco Systems, Inc. according to the version level of the internal software, which helps them quickly determine which units need updates.

The expanded tool also can list the version and license level for Novell, Inc.'s NetWare on servers throughout the network and the type and version of Microsoft Corp. operating system on servers and clients.

Future releases will include the ability to monitor the performance of processors, storage and other subsystems in servers running NetWare or Windows NT, Erwin said.

Such systems management capabilities set Kaspia apart from competitors such as Concord Communications, Inc. in Marlboro, Mass., DeskTalk Systems, Inc. in Torrance, Calif., and 3DV Technology, Inc. in Nashua, N.H.

Kaspia Monitoring System runs on Windows NT and costs $5,000, plus $160 for each device to be monitored.

It's like we mixed some dilithium crystals in with the silicon

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COMMENTARY

Nothing but net

BOB WALLACE

With the year drawing to a close, it's time for IS managers to take the networking challenge. Where do you stand with knowledge of key terms and acronyms? Break out your No. 2 pencils and begin.

1. What is a hub?

A) The center of an airline's transportation system.

B) The part of a wheel that you put a cap on.

C) A device that handles traffic to and from LAN users.

2. What is a router?

A) A machine that mills the surface of wood or metal.

B) A horse trained for distance races.

C) A device that directs traffic from its origination to destination.

3. What is Fast Ethernet?

A) A special epoxy for Ethernet LANs.

B) The winner of the 1996 Winston Cup.

C) A 100M bit/sec. LAN technology.

4. What is ATM?

A) A cash-dispensing machine.

B) An experimental chemical weapon.

C) An emerging high-speed switching technology.

5. What is a VLAN?

A) The successor to the Frisbee.

B) A famous fashion design firm.

C) A LAN workgroup divided along logical rather than physical lines.

6. What is Rmon?

A) The Martian from the *Bugs Bunny* cartoon that wants to destroy Earth.

B) A region in France.

C) A Remote Monitoring technology for LANs.

7. What is the IETF?

A) A new solvent.

B) The organization that has repeated standoffs with militia groups.

C) An organization that builds support for networking technologies.

8. What is a T3?

A) The name of Arnold Schwarzenegger's next *Terminator* movie.

B) The latest Stealth fighter model.

C) A 45M bit/sec. WAN line.

9. What is baselining?

A) The layer of a coat closest to your body.

B) A new way to do illegal drugs.

C) A method for determining LAN or WAN usage.

10. What is a solution?

A) The answer to a math problem.

B) A mix of chemicals used for various purposes.

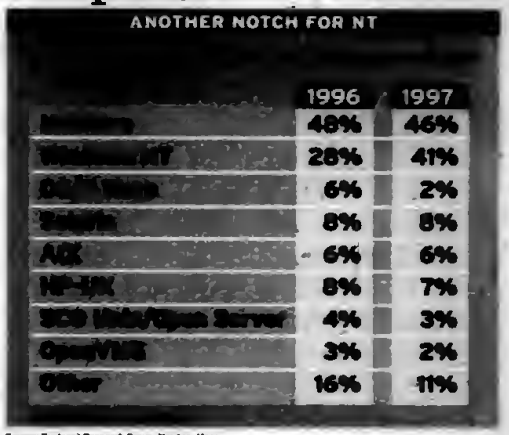
C) Anything a vendor wants to sell you.

Answers: C to everything.

- If your score was between 0 and 4, don't touch anything but the coffee machine.
- If your score was between 5 and 7, get thee to a networking seminar or conference.
- If your score was between 8 and 10, you have a fighting chance in the networking industry.

Wallace is Computerworld's senior editor, internetworking. His Internet address is robert_wallace @cw.com.

Snapshot



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The Internet

The World Wi

Briefs

Internet fax

Internet service provider PSInet, Inc. in Herndon, Va., will offer its customers the ability to save money on long-distance charges by sending faxes over the Internet using PSInet InternetPages. The service was built using Cambridge, Mass.-based NetCentric Corp.'s FOPware technology, which places software at a service provider's point of presence (POP). In the next several months, PSInet will examine other extended subscriber services it can offer using FOPware technology, company officials said.

ONLINE CONSUMER PURCHASES

Source: Jupiter Communications, Inc., New York

Web server tools

Kiva Software Corp. in Mountain View, Calif., has announced server software and a development package for building big, high-volume business applications on the World Wide Web. The Kiva Enterprise Server uses Java tools for remote management. Pricing for the server starts at $25,000 per server for Windows NT and $35,000 on Sun Microsystems, Inc.'s Solaris and Hewlett-Packard Co.'s HP-UX operating systems.

The Enterprise Server SDK development module was designed to use tools that developers already use for building other applications. It includes a library of Java and C++ routines. The Enterprise Server SDK costs $995 per developer and runs on the same platforms.

Utah ha[illegible]

▸ *State agencies to offer services on Internet*

By Justin Hibbard

THE STATE OF UTAH has set its sights on companies equipped to exchange information and money with government agencies via the Internet.

The Utah government plans to bring all its agencies on to the World Wide Web by next summer and begin conducting Internet-based electronic commerce with the private sector by the end of 1997. By offering a one-stop Web site packed with all the information required for doing business in Utah, officials hope to attract forward-thinking companies to the state.

In September, Utah appointed John Child its state webmaster, the first position of its kind in the U.S.

Child oversees a comprehensive plan to create a Web presence that will let residents gather information from state agencies and conduct most of their business with the state online. The state is also promoting itself online with information designed to lure businesses to Utah.

"The goal of our Web is to be very services-oriented, not information-oriented," Child said. "So you're going through processes, not just information."

Most Utah government agencies post static documents on their Web sites, such as instructions for filing state tax returns. But by next summer, agencies plan to offer transactional services through their sites. Eventually, citizens will be able to buy a fishing license or renew their vehicle registration over the Web, according to Child.

Online payments will be authorized by digital signatures.

Utah, page 76

State of Utah webmaster John Child

US West streamlines intranet

▸ *App dev gives Domino edge over Netscape*

By Barb Cole

AS AT MANY large companies, World Wide Web servers have shot up like weeds on US West Communications, Inc.'s corporate network.

Dozens of Web servers give individual departments freedom, but they raise development costs and spread corporate information across a mix of servers that aren't easily accessible.

"We [have] Web servers all over the place," said William White, senior director of enterprise architecture at the Denver-based company. There are organizations within the company trying to outdo one another's Web sites and lots of information systems people trying to be webmasters, he said.

So the company is consolidating some of the Netscape Communications Corp. SuiteSpot servers that anchor its thriving intranet and is moving toward Lotus Development Corp.'s Domino as a platform for Web applications, according to Motti Goldberg, US West's chief architect.

White and Goldberg are about to spread the Domino effect through US West

Lotus shipped Domino 4.5, its Notes/Web server hybrid, in December. By centering Web development on Domino, US West will reduce the number of Web servers to about 10. This will result in lower administrative costs and fewer points of failure. What's more, Web applications will be built in the familiar Notes environment, reducing developer training time.

According to Ian Campbell, a senior analyst at International Data Corp. in Framingham, Mass., US West is ahead of the curve in its Domino rollout. "They are leading the pack," Campbell said. "Most large Notes shops are still trying to figure out where [Domino] fits."

Domino won out as an application platform because traditional Web servers are too unreliable to host mission-critical applications and require too much custom coding in low-level programming languages, Goldberg said. Domino also offered some key features — such as security, replication and

US West, page 76

http:

By Mitch Wagner

Firewalls often include filters to allow information systems managers to block employees from accessing selected sites on the World Wide Web. Often, those filters are set to block frivolous sites, for fear that employees will waste productive time playing online.

Herein, we present a list of filterable sites that represent a grave threat to productivity. We tested these sites exhaustively and determined that they're too much darn fun for people to be allowed to access them on company time.

THE CATS' HOUSE

• www.thecatshouse.com

To see a house that's been remodeled to make it more convenient for a family of nine cats, visit The Cats' House. See time-lapse photography of actual cats! And people! Asleep! Together!

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• www.unitedmedia.com
• www.uexpress.com

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MR. SHOWBIZ

• www.mrshowbiz.com

Mr. Showbiz from Microsoft Corp. co-founder Paul Allen's Starwave Corp. will help you catch up on celebrity gossip and entertainment news.

LURKER'S GUIDE TO BABYLON 5

• www.hyperion.com/lurk

There are literally thousands of sites devoted to television show fandom, but this is our favorite. There's nothing like starting the day with a Danish, a cup of hot joe and a skirmish in the eons-old war against the forces of galactic darkness.

Utah harnesses Web

CONTINUED FROM PAGE 75

Utah last year was the first state to adopt a law enabling electronic commerce through digital signatures. However, regulations for implementing the law are still in the works, and no certification authority has been licensed.

In the meantime, Utah agencies are building informational sites that often span several departments. For instance, employees from the Department of Commerce, the Tax Commission and other agencies collaborated on a site called "Doing Business in Utah," which provides all the information and downloadable forms a person needs to start a business in the state.

The Utah Digital Signature Act of 1995 was the world's first statute to enable electronic commerce through digital signatures.

"The information that person could need could come from many different agencies," Child said. "We built Web pages that bring all those processes together."

According to Child, no one in the state government had considered centralizing the processes for starting a business until the agencies began to offer services on the Web. "The Web is causing our state to re-evaluate our processes and make them more seamless," Child said.

BOON TO BUSINESS

Ray Laracuenta, an analyst at Gartner Group, Inc. in Stamford, Conn., said any technology that makes a state government's services more accessible will increase the state's attractiveness to business.

"In the long term, it may become a competitive differentiator from state to state and county to county," Laracuenta said. "A general contractor working with the state of Utah is going to feel more secure going through a virtual private network [on the Internet]."

Janis Perry, community relations director at the Utah Tax Commission, helped create "Doing Business in Utah."

"We're trying to overcome agency boundaries," Perry said. "It's still sputtering a bit, but the vision is one-stop shopping."

Perry and Child said the impetus for the agencies to get a presence on the Web came from Utah Gov. Michael Leavitt. According to Child, Leavitt has been an unflagging supporter of Utah's Information Technology Services department. That department — with a $23 million budget for fiscal 1997 — is the most heavily funded in the state.

"Web development is still kind of taking a back seat to some of the other projects we've got going," Child said. The state has an aggressive year 2000 conversion plan under way as well as a plan to provide information on kiosks installed in public places throughout the state.

But Child said most agencies have responded favorably to his evangelism efforts. "For the most part, people are really waking up to it."

Europe races toward intranets

▸ *Companies focus on internal communications*

By Joanne Taaffe

IN THE past year, intranets have won corporate hearts not only in the U.S., but also in Europe, according to results of a survey by The Yankee Group.

The U.S. is way ahead of Europe when it comes to intranet adoption, with 56% of U.S. companies interviewed by The Yankee Group either already equipped with an intranet or planning to install one by the end of 1996. Another 26% foresee setting up an intranet in 1997, and 9% percent plan to do so in 1998. The other 9% of the companies interviewed had no plans for building an intranet.

In Europe, 1996 looks set to finish with a lower rate of intranet adoption than the U.S. — only 29% of European companies have built intranets — but every European company interviewed has an intranet plan in the offing.

In the next one to two years, 69% of those Europeans without an intranet intend to build one, and the remaining 31% foresee setting up an intranet within three years, the survey found.

"It's staggering [how intranet adoption has] occurred so quickly," said Keith Mallinson, managing director of The Yankee Group Europe.

By far, the largest use now for an intranet is communicating internally and accessing information. But that will change, according to the survey.

Two years from now, companies expect to see their intranets' work divided up evenly between four areas: communicating internally and accessing information, contacting customers, communicating with business partners and internal collaborative applications.

SOME CAUTION

Not all conference attendees were gung ho about intranets. The recent investment in Lotus Notes by U.K.-based ICI, a multinational manufacturer of paints, chemicals and fertilizers, has made the company unwilling to switch over to an intranet. "The jury's still out on intranets," said one of the company's telecommunications managers.

Taaffe writes for the IDG News Service's Paris bureau.

US West streamlines its intranet

CONTINUED FROM PAGE 75

hooks to other databases — that were part of the core server.

US West recently saw the benefits of building Web applications around its Notes infrastructure when it constructed a system for a year 2000 planning discussion group. "We needed to profile all the applications we have," White said.

Such data collection would traditionally be done either with a paper form or a Web-based form.

"If I used a straight HTML form, I'd wind up with a whole bunch of files on a Unix server," White said. Instead, the group built the forms in Domino in about 40 hours and was able to capture the data in a Notes database.

"What I saved was several weeks worth of paying a high-priced programmer to extract that information off a Web server," White said.

NOT A PANACEA

Although Domino has proven itself at US West, the company sees room for improvement. "Domino provides Web-level access to Notes; what it doesn't provide is the power of Notes to Web browser users," Goldberg said.

For example, because Web browsers don't support all the back-end functionality of Notes, US West today must decide whether to target Web browsers or Notes clients when building applications.

"We're not really sure how to use Domino in its current state to access some of our more sophisticated, process-intensive applications, since it would mean downgrading them for browsers," Goldberg said.

Goldberg said the company wants to build an application and deploy it on a mixture of Web and Notes clients — without sacrificing client functionality.

NEW PRODUCTS

GEMSTONE SYSTEMS, INC. has announced GemBuilder for Web and GemBuilder for Java, which can be used by developers to move applications to the World Wide Web with a GemStone server.

According to the Beaverton, Ore., company, GemBuilder for Web provides a full Hypertext Transport Protocol server within GemStone to give Web browsers direct access to objects in GemStone without the need for Common Gateway Interface calls.

GemBuilder for Java lets Java clients have high-performance access to all GemStone services, including transaction management and legacy integration.

Pricing for both products is $4,000 for Unix systems and $3,200 for Windows systems.

GemStone Systems
(503) 629-8383
www.gemstone.com

ELEKTROSON, INC. has announced WebGrabber, software installed on a World Wide Web browser to download Web content to a CD-Recordable.

According to the Campbell, Calif., company, downloading to a CD is controlled from a Netscape Communications Corp. Navigator menu.

Users collect on a hard disk the files they want to store and choose a CD-Recordable function. The files are written to CDs in Hypertext Markup Language format.

WebGrabber costs $79.95.

Elektroson
(408) 371-4800
www.elektroson.com

SEQUEL TECHNOLOGY CORP. has announced Sequel NetPIM, a Personal Internet Manager to let users access, manage, share and update World Wide Web browser information.

According to the Bellevue, Wash., company, Sequel NetPIM was designed to let users create personal filing systems for storing and sharing Web-based information.

The product also analyzes online sessions and schedules automatic searches for site updates.

Sequel NetPIM costs $39.95.

Sequel Technology
(206) 646-6780
www.sequeltech.com

USA.NET, INC. has announced NetAddress, a free, advertisement-supported, World Wide Web-based electronic-mail service.

According to the Colorado Springs company, NetAddress provides premium features not found in other free E-mail services, including a permanent E-mail address for subscribers. A NetAddress E-mail address can remain with a person forever.

The service is free.

USA.NET
(719) 592-1240
www.netaddress.com

PEGASUS SYSTEMS, INC. has announced TravelWeb, Inc.'s Click-it Weekends, a World Wide Web site with weekly updates on the lowest published rates for certain hotels.

According to the Dallas company, rates are being posted for Friday-through-Sunday arrivals, with departures Saturday through Monday for Hyatt Hotels and ITT Sheraton Corp. Other rates are being added to provide last-minute weekend discount information.

Pegasus Systems
(214) 528-5656
www.travelweb.com

Corporate Strategies

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Briefs

Home banking slow

New research on home banking from SRI Consulting in Menlo Park, Calif., suggests that only one in 10 U.S. households will adopt home banking in the next three to five years. Currently, only 4.7 million households, or 4%, use the systems.

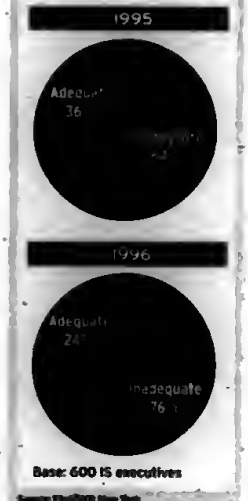
Withdrawing tellers

National Westminster Bank PLC said it plans to cut as many as 10,000 jobs, or 20% of its workforce, over the next five years as it increases its reliance on computer-equipped branches and de-emphasizes its use of tellers. NatWest, one of Britain's largest banks, has eliminated about 15,000 jobs in the past five years. The latest round should leave the bank with some 40,000 employees.

Fingerprint imaging

The National Registry, Inc. has launched a pilot program with Sarasota Memorial Hospital in Sarasota, Fla., for the evaluation of fingerprint imaging technology to secure access to computerized hospital records.

Do data centers possess adequate information management tools to deal with open enterprise information growth?



Base: 600 IS executives

Source: Yankee Group, Inc.

Sears automates parts inventory

By Randy Weston
CHICAGO

UNTIL RECENTLY, inventory management at Sears, Roebuck and Co.'s repair service division consisted of employees at its 600 service centers wandering the warehouse floor, looking to see which supply bins were running low.

INVENTORY MANAGEMENT

The inefficient system was a major obstacle to improving customer service and inventory accounting as the Hoffman Estates, Ill.-based retailer juggled 11 million service contracts on 23 million appliances.

"It's just inconceivable that we could continue into the future without some sort of inventory management system," said Carol Ricchio, senior systems manager at Sears' home services division, which handles repair services.

So the company turned to client/server technology to automate the process. It is already seeing results at the two test sites that are running the system. The first went online in February, the other in late summer.

"It's helped limit local purchasing, and the inventory levels have dropped in both locations," Ricchio said. "We are moving to a more 'just-in-time' organization."

With Sears' 30-year-old mainframe-based system, managers were unable to forecast supply needs accurately and prioritize inventory to meet customer demands.

"Our forecasting could not respond to seasonal changes or account for the life cycle of stock," Ricchio said.

Ricchio said many parts regularly were thrown away because they were obsolete. Repair workers often told customers, "I'll be back in a week" because they had no idea what was in stock at their local site. If a field worker called the office looking

Sears, page 78

Sears is moving "to a more 'just-in-time' organization"

Driving chairs to market

Herman Miller's Frank Mellon says the company gets chairs and desks to customers on time with new inventory planning

By Thomas Hoffman

HERMAN MILLER, INC., a $1.3 billion office systems manufacturer in Zeeland, Mich., has a simple business credo: "We want to be able to make promises we can keep and keep the promises that we make."

But until recently, the company had trouble sticking to that pledge. Sixty-five percent of its 3,000 weekly orders were shipped on time within four weeks, but other orders took up to nine weeks.

Thanks to a Unix-based inventory planning system it installed in June 1995, Herman Miller now can synchronize mega-orders among four or five plants across the U.S., and it delivers more than 98% of its orders on time.

To make the project work, Herman Miller had to eliminate its outdated business processes. Instead of tackling a major reengineering initiative, the company drew up 10 customer-centric principles that formed the basis of all company policies. As policies had to be

Inventory, page 78

'Don't take our Macs,' NASA users say

▸ *Protesters argue Wintel purchases are wrong*

By Lisa Picarille

THE BATTLE over replacing the more than 3,500 Macintoshes at NASA's Lyndon B. Johnson Space Center in Houston is getting nasty. Ardent Macintosh users are campaigning to keep their workstations against an information systems manager who wants to standardize on Windows PCs.

The battle began more than a year ago when Johnson Space Center Chief Information Officer John Garman issued an order that would replace the center's Apple Computer, Inc. Macintoshes with Intel Corp.-based PCs that run Windows 95. The sprawling space center already has more than 7,500 Windows machines.

In the past year, angry Macintosh users launched a highly publicized protest that enlisted the support of Rep. Tom Delay (R-Texas). Protesters also deluged Daniel Goldin, a former NASA CIO, with electronic mail. But most users acted anonymously for fear of losing their jobs [CW, Dec. 16].

In the past month, the pro-Macintosh and pro-Wintel camps both have posted small victories.

NASA's Office of Space Flight Safety and Mission Assessment concluded Dec. 16 that the space center's information technology handbook didn't need to specify Windows 95 as its required operating system for desktop computers. That could leave room for the Mac OS to keep its foothold.

But the same office the previous week rejected arguments from Macintosh users that switching to PCs would compromise flight safety.

NASA Macs, page 78

Macintoshes at the Johnson Space Center might be replaced by Intel machines that run Windows 95 despite a study that says:

- It costs no more to support dual platforms
- The higher percentage of Macintoshes, the lower the total technical support costs
- Support costs for Macintoshes are 25% lower than for Windows

Source: Gartner Group, Inc., Stamford, Conn.

COMMENTARY

Confessions of a former programmer

GARY H. ANTHES

EVERY NIGHT at midnight, the secret messages went out from U.S. Navy headquarters in London to military bases and ships in the North Atlantic and Mediterranean.

The messages contained coordinates for Soviet targets of U.S. nuclear weapons, and the targets were subject to daily adjustment as the weather changed.

But sometimes the messages were late, delayed by a computer program that occasionally and mysteriously went into an endless loop. I was a programmer at the Fleet Operations Control Center for U.S. Naval Forces Europe in London, and in 1972 I was assigned to fix the recalcitrant message generator.

Thus did I become a tiny part of the Pentagon's huge year 2000 problem.

The program was written — not by me — in the 1960s in the Navy Electronics Laboratory International Algorithmic Compiler (NELIAC), an Algol derivative.

NELIAC was complex, and I couldn't figure out just why the program would sometimes begin its endless loops. But I found a way to make it behave by manipulating the addresses passed to and from a key subroutine. NELIAC couldn't do that, so I inserted assembler language code at the beginning and end of the routine.

It was a brute-force solution. It was a kludge. The program with my additions was even uglier than before, and it remained completely undocumented. But it worked, and I got no more calls in the middle of the night.

The program was full of date and time logic, but because those parts worked fine, I never looked at them and never learned whether they were fit for duty in the 21st century.

Not that I cared. If I didn't care enough to write documentation for my replacement who was coming on board a year later, and my boss didn't care enough to insist on it, we certainly weren't going to worry about an event that might occur long after we both had left the Navy.

So there you have it: a large program written in an obscure language with assembler language patches and no documentation, supporting a mission-critical, classified application. It's enough to make you weep for those doing the Defense Department's year 2000 systems work.

By now, my messaging program probably has been replaced by some off-the-shelf commercial package. But plenty more like it remain, looping on endlessly, as it were, toward Jan. 1, 2000.

Anthes is Computerworld's *senior editor, government and security. His Internet address is gary_anthes@cw.com.*

Inventory

CONTINUED FROM PAGE 77

tweaked during the installation and testing of its inventory planning system, Herman Miller reworked each on a case-by-case basis, said Frank Mellon, director of operations at the firm.

"It sounds simple, but it was breakthrough thinking," Mellon said. He added that another key to the project's success was the support of top-tier managers, including the CEO and the chief financial officer.

Herman Miller now can keep its inventory levels down and take better advantage of its production capabilities. The company was able to pay for its $2 million-to-$3 million software and implementation investment "much faster" than the five-year payback period originally anticipated, Mellon said.

Herman Miller's previous planning system was built 20 years ago when 16-week order cycles were de rigueur.

Back then, orders were batched together on the mainframe, and the identity of each customer's order was lost. Items were stockpiled until the order was 100% complete, choking distribution centers, and leaving customers waiting for desks and chairs. That resulted in 7% to 12% of the company's plant and distribution center capacity being wasted, which limited the company's ability to grow.

"Systems back then didn't factor in the time pressures we face today," Mellon said. As such, the company saw an opportunity to compress its manufacturing cycles, give customer orders more visibility in the factories and cut costs.

It seems to be working for Herman Miller, which like market leaders SteelCase, Inc. in Grand Rapids, Mich., and Haworth, Inc. in Holland, Mich., was forced by lean times in the early 1990s to become more efficient.

Industry analysts are bullish on Herman Miller, forecasting earnings and revenue growth for 1996 at about 12%. "They're taking market share and doing a very nice job," said Dan Poole, an analyst at First of Michigan Corp. in Detroit.

In June 1995, Herman Miller began installing intelligent planning modules from Dallas-based I2 Technologies, Inc. on Hewlett-Packard Co. HP 9000 Unix machines that serve its manufacturing sites in Georgia, California and western Michigan. That last plant, a work surfaces facility in Zeeland, is scheduled to be linked with I2's Rhythm software by the end of December, Mellon said.

Sears

CONTINUED FROM PAGE 77

for a part, someone had to physically go look in the bin for it, she said.

In the two Chicago-area test locations, repair workers now use remote devices to check on stock availability, or they call the office for a quick computerized check. If a part isn't available, they can tell a customer when it will be.

The multimillion-dollar project took three years to design and implement. It is within budget, and the remaining service centers nationwide are being added to the system.

Sears chose inventory management, purchase order and requisition tracking applications from Lawson, Inc. in Minneapolis and inventory forecasting and replenishment software from Lucas, Bear and Associates, Inc. in Fort Washington, Pa.

Not all the mainframe functions were scrapped. Ricchio said Sears needed to maintain mainframe applications such as order management and parts sorting. So six of the 24 information systems employees dedicated to the project carefully designed an architecture that supported the new technology but would also allow the mainframe functions to be tied in.

The mainframes are connected to a Unix-based IBM SP2 complex where the Lawson and Lucas Bear software resides. An Informix Software, Inc. database is also connected to the complex.

Ricchio said she credits the project's success to planning and making functionality, not technology, the central focus.

Bill McSpadden, president of Plant-Wide Research Group, a consultancy in Billerica, Mass., said Sears took the right approach by implementing a client/server migration for specific functions and using a Unix machine to tie in old critical mainframe applications.

"You see more of this Unix method than [the method of partitioning off the mainframe from client/server]," he said. "Less than 5% of the mainframe shops out there moved to a smaller system via a client/server route. Almost all of them are retaining their legacy systems."

NASA Macs

CONTINUED FROM PAGE 77

The safety argument is one of several points NASA Macintosh users have pushed.

For example, Macintosh advocates have accused Garman of rewriting regulations and ignoring cost/benefit studies in order to standardize on Intel-based PCs that run Windows 95. Before he acquired several PCs, Garman was given a report from Gartner Group, Inc. in Stamford, Conn., that indicated that the purchase of 3,500 Macintoshes would cost $2.5 million less when amortized over a five-year period than buying the same number of Windows 95 machines.

Macintosh users' cost/benefit argument won backing from a report by the Office of the Inspector General. It charged that Garman's move to use Windows 95 as the standard desktop operating system wasn't cost-effective and didn't consider users' requirements [CW, Nov. 18].

"It's really frustrating not to be able to voice your opinion without worrying about retribution."
– A Macintosh user at Johnson Space Center

USERS FRUSTRATED

For users, the fear of retribution if they speak up about their concerns is causing anxiety, some said. "It's really frustrating not to be able to voice your opinion of the situation without worrying about retribution," said a Macintosh user at the space center, who asked not to be named.

A Macintosh user at Lewis Research Center in Cleveland said he sympathizes with the Johnson Space Center Macintosh users' plight. "I would fight like heck to keep the Macintoshes up here if anything like that ever happened. But I'm not so sure it would be worth losing my job over it," the user said.

A November inspector general's report found evidence of "disturbing" behavior on the part of Johnson Space Center officials against users who questioned the policy. A user who asked not to be identified said a supervisor threatened him with time-card violations, which are considered a serious offense at NASA.

Don Andreotta, NASA's deputy CIO for operations, said the space center's battle over Macintoshes is just a policy issue. "This is not a religious war. This is more a question of how decisions were made," Andreotta said.

The answers likely will be all about politics, observers said.

Keith Cowing, president of Reston Communications and publisher of "NASA RIF Watch," an online newsletter in Reston, Va., said because politics are prevalent at NASA, it is likely that Garman has enough clout to move all of Johnson Space Center to Windows if he wants to.

Several NASA entities are looking into how Garman arrived at his Windows PC decision and if that decision complied with NASA regulations. An official report on the situation is due March 7.

Jobs Forecast '97

EXPERIENCE REQUIRED

Companies will continue to hang out the help-wanted signs for IS professionals in 1997. But they've raised the bar on the skills required.

By Melanie Menagh

CLEARLY A MURKY OUTLOOK

The information systems hiring forecast for 1997 is decidedly ambiguous. Unlike 1996, when a frantic cry went out for all available IS talent, caution is in the air. Companies will still need all the good help they can get — but the emphasis will be on "good."

"What's strikingly important in all positions at all levels is that the bar's been raised in basic intelligence and skills," says Pat McGinty, director of IS at Silicon Systems, Inc. in Tustin, Calif.

Sure, IS departments are looking for people, but not just any people. "There's no room for average or even above average. I'd rather have one excellent person than three good people," McGinty says.

Experience required, page 80

ILLUSTRATIONS BY SCOTT MORNIN

HELP-WANTED ADS YOU'LL BE SEEING

Composite profiles of the hottest IS jobs, skills and industries for 1997

South Atlantic region

ENTRY-LEVEL POSITION
Tell-All Communications, Inc.
Orlando, Fla

A worldwide player in the telecommunications industry with headquarters in Orlando, we have annual revenue of $2 billion. We can offer you an exciting beginning to your career within a large IS department that requires a wide array of skills, including networking and Web development. You'll have an opportunity to work with top professionals. Employee training is supported by a substantial budget.

We're looking for an energetic self-starter who can train to our specifications. Familiarity with Windows NT and Microsoft SQL Server a plus. We'll train you on C++, Visual C++, PowerBuilder and basic networking.

Requirements: a degree in computer sciences and/or business, command of basic IS operations and excellent interpersonal skills. Foreign language skills a plus. Competitive starting salary and benefits.

West South Central region

PROJECT MANAGER
Sav-U-Mart
Gilcrease, Okla.

Join our small, close-knit IS team that serves a dynamic deep-discount retail company with 107 outlets in Texas, Oklahoma and Arkansas. Our aim is to be progressive, but with proven technologies. We're located on the outskirts of Tulsa, where the cost of living is low, and the quality of living is high.

Looking for four to five years of ex-

Help-wanted ads, page 80

EXPERIENCE REQUIRED

CONTINUED FROM PAGE 79

SURVIVAL OF THE FITTEST

Hiring managers are clearly more fussy about who they'll sign on.

That's particularly true in McGinty's high-profile, fast-paced Pacific region, which is expected to be one of the hottest job markets in 1997. The composite help-wanted ads on these pages reflect the hottest jobs, skills and industries for various regions. IS employers in the Pacific region are typified by Bill Gates University's picky classified ad.

As a part of this natural selection process, several IS managers report they're taking fewer chances with off-the-street hires. They say they prefer to hire known quantities. Others say they're focusing on training and promoting internally. That's especially true in the federal government, where budget belts are cinched in — way in.

Another strategy — for example, the composite help-wanted ad for a LAN administrator at World Wide Widgets — is to bring someone in temporarily to check out the fit before committing to that person. "This way, each party gets a chance to look at the other," says Peter Stempien, information technology associate at Otis Elevator, Inc. in Bloomfield, Conn. "That way, we're not buying a pig in a poke."

A STORY OF SHIFTING SANDS

The upside to the IS job market in '97 is that 59% of IS departments surveyed reported increases in their budgets. Leading the pack is the East North Central region (see map for constituent states), with 70% of respondents reporting an increase.

The South Atlantic region, 1996's big gainer, this year tied with the Mid-Atlantic region for second place, with 67% of companies surveyed reporting increases in their IS budgets. But the South Atlantic region also posted the most pervasive decreases in IS budgets, with 23% of IS departments reporting cutbacks of 5% to 15%. The South Atlantic also tied the New England region for most-cited decreases in staff head counts for '97 — 10%. Could that be post-Olympics rightsizing?

The East North Central region also leads the pack in '97 for upping IS staff numbers (53%), followed by the Pacific region (50%) and West South Central states (47%). All three regions are represented by composite ads in our help-wanted column.

ROOM AT THE TOP AND BOTTOM

"Companies want top-dog CIOs, strong project-manager types, then doers — people with their hands in machines, doing something. There are no layers in between," says Patrick Hayes, marketing director and chief information officer at Lucent Technologies, Inc. "We like people who've gone and cut their teeth at a big company, with three to four years' experience. If they have more than that, they're too expensive."

A small IS organization can hire midlevel people for less money (note the evasive salary reference in the composite Sav-U-Mart ad). In the bellwether Pacific region, 20% reported they're looking for a LAN manager, 37% need a network administrator and a measly 3% will be hiring project managers. In the South Atlantic region, 43% of hiring managers said they want PC technical support specialists.

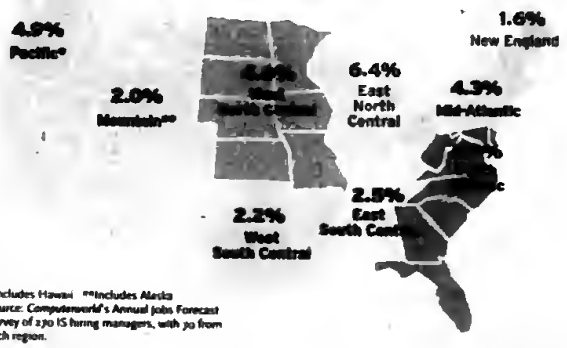
Thus, opportunities exist at early career stages at large companies such as the composite Tell-All Communications. But strong skills are still wanted even at the entry level.

Shaun Thiessen, data processing manager at Consolidated Investment Group, a holding company in Wichita,

Experience required, page 81

COLD CASH

IS starting salaries for 1997 will increase at a much lower rate than a year ago – the increases will be half what they were in most regions. The South Atlantic states were promising 17% increases last year, but only 49% is expected this year. The only regions that expect increases larger than a year earlier are the Pacific and West North Central regions.



*Includes Hawaii **Includes Alaska
Source: Computerworld's Annual Jobs Forecast Survey of 270 IS hiring managers, with 30 from each region.

IS DEPARTMENTS ARE LOOKING FOR . . .

Rankings of job titles most in demand, by region:

Mountain	New England	Pacific	West South Central	East South Central	Mid-Atlantic	[illegible]	West North Central	East North Central
1. PC technical support specialist	(Tied response)	1. Network administrator	1. Systems analyst	1. PC technical support specialist	1. PC technical support specialist	1. PC technical support specialist	(Tied response)	1. Programmer analyst
2. Network administrator	1. PC technical support specialist	2. PC technical support specialist	2. PC technical support specialist	(Tied response)	2. Programmer analyst	2. Programmer analyst	1. PC technical support specialist	(Tied response)
3. Programmer analyst	Systems analyst	3. Systems analyst	(Tied response)	2. LAN manager	3. Network administrator	3. Systems analyst	Programmer analyst	2. Systems analyst
(Tied response)	3. Programmer analyst	4. Programmer analyst	3. Programmer analyst	Computer operator	(Tied response)	4. Project manager, systems and programming	Systems analyst	PC technical support specialist
4. LAN manager	4. Network administrator	5. LAN manager	Computer operator	(Tied response)	4. Project manager, systems and programming	(Tied response)	Network administrator	LAN manager
Database manager	5. Database manager		3. LAN manager	4. Network administrator	Programmer analyst	5. LAN manager	LAN manager	5. Database manager
Help desk manager				Programmer analyst	Systems analyst	Network administrator		
				Help desk manager				

Source: Computerworld's Annual Job Forecast Survey of 270 IS hiring managers, with 30 from each region.

HELP-WANTED ADS YOU'LL BE SEEING

CONTINUED FROM PAGE 79

perience. Improving data warehousing and network management are integral parts of our strategy. You must have extensive experience with data processing, client/server technology, Oracle and Windows-based software (95, NT and NT Server) or similar systems and be ready to train on ours. Must be able to coordinate electronic data interchange and design an interface to link customers, vendors and flow of merchandise. Internet/intranet skills a plus; we're currently outsourcing but would like to bring in-house.

In our service-driven organization, excellent people skills and communication skills (written and oral) are a must. Business acumen is essential; retail experience preferred but not required. Business considerations run our IS department, not vice versa. Only team players willing to roll up their sleeves should apply. Send resume and salary requirements to above address.

Pacific region

NETWORK ADMINISTRATOR
Bill Gates University
and Medical Center
Bellevue, Wash.

No room for average performers here. We want someone with not only seven to eight years of expertise, but also a proven ability to learn and adapt to multifaceted sets of customers. At BIG U, we're leaders in technology research and pioneers in education and health care. Our IT organization maximizes its budget by employing top performers.

Our network administrator must understand and troubleshoot various hardware environments and vendor-specific interfaces. You must have object programming skills and be familiar with desktop services and various PC configurations to integrate network and software. Systems administration includes hands-on work with

Help wanted ads, page 81

EXPERIENCE REQUIRED

CONTINUED FROM PAGE 80

Kan., can attest to the need for the right match by entry-level employees. Thiessen is seeking an entry-level person, "to assist the manager — basic grunt work." Thiessen says he prefers someone who's "excited and enthusiastic but not expecting to be driving decisions. I want someone to teach how to support this company."

RETRENCHING IN THE TRENCHES

David Larsen, IS director for the city of Murray, Utah, expresses a cautionary note that is echoed in smaller IS departments: "We do not want to be pioneers. We want to be progressive but with proven technology."

The Internet/intranet ballyhoo has given way to some IS soul searching. The players who shot out of the gate fast are reassessing and adjusting. Some are bringing outsourced 'net operations in-house. Others are taking a wait-and-see approach. "We don't yet have a niche for the Internet; that's some time in the future," says Joe Yannarella, vice president of IS at Phar-Mor, Inc. in Youngstown, Ohio. Nevertheless, 65% of respondents nationally said they expect to increase their '97 budgets for Internet and intranet development — how much remains to be seen.

At the opposite end of the spectrum, there has been an increase in Cobol and data processing needs, especially in areas heavy with mainframe systems. In the East North Central region, 13% of hiring managers said they will increase staff with Cobol skills. What goes around, comes around, Hayes says. "Skills outdated two years ago can command good wages now."

So who's hiring what? For languages, 15% of IS managers nationally plan to hire staff with skills in Hypertext Markup Language (HTML). HTML is followed distantly by C++, at 10%. In development tools, 16% of managers are looking for Microsoft Corp. Visual Basic skills and 11% for Oracle Corp. Developer/2000. Windows 95 and Windows NT are running neck and neck among operating systems, at 34% and 33%, respectively.

Networking top scorers are TCP/IP at 36% and Ethernet at 31%. Microsoft NT Server (29%) follows Ethernet (30%) in LAN systems. In relational database management systems, it's Oracle at 14% and Microsoft SQL Server at 11%. For system software and support, the big leader is networking management at 27%, then World Wide Web development, with 26% of respondents hoping to hire for that skill.

The composite ads say it all: Interpersonal skills — "soft skills" — are a must. IS managers sounded the same litany: "People" will get hired first.

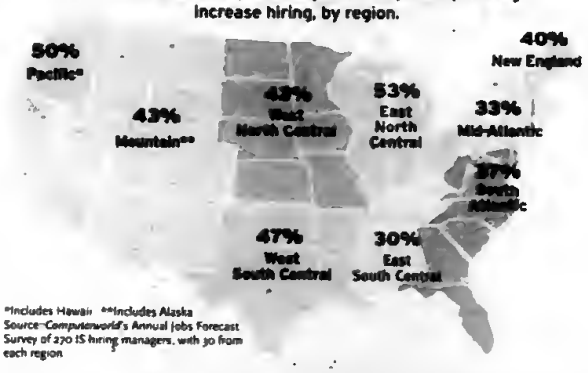
"You can't put your IT hat on and get people to conform to you. You have to be supportive," says Carroll Clabaugh, assistant vice president of data processing at Colorado Casualty Insurance Co. in Englewood, Colo.

"Being a techie can be a considerable problem. We require excellent interpersonal skills up and down the staff. We're a service organization; this is absolutely key," says Al Curcio, director of IS and sales support at Anne Klein Co. in New York.

Menagh is a freelance writer in Maple Corner, Vt.

HOT MARKETS

In the East North Central region, more than half of those surveyed plan to increase IS hiring in 1997, making the region the hottest job market. Shown are the percentages of companies planning to increase hiring, by region.



*Includes Hawaii **Includes Alaska
Source: *Computerworld*'s Annual Jobs Forecast Survey of 270 IS hiring managers, with 30 from each region

WHAT SKILLS EMPLOYERS NEED

The technology skills most in demand, by region:

	Mountain	New England	Pacific	West South Central	East South Central	Mid-Atlantic	South Atlantic	West North Central	East North Central
Languages	C++, Java, HTML	C, C++	HTML	HTML	HTML	HTML	C, C++	C, C++	HTML
Development tools	Developer/2000	Oracle Developer/2000	Visual Basic, Developer/2000	Visual Basic, Developer/2000	Visual Basic	Visual Basic	PowerBuilder Visual Basic, Visual C++	Visual Basic	Visual Basic
Operating systems	Windows 95	Windows 3.1	Windows NT	Windows 95	Windows 95	Windows 3.1, Windows 95, Windows NT	Windows NT	Windows NT	Windows NT
Networking	Ethernet	TCP/IP	TCP/IP	Ethernet	Ethernet	TCP/IP	TCP/IP	TCP/IP, Ethernet	TCP/IP
LAN	Ethernet	NT Server, Ethernet	NT Server	Ethernet	Ethernet	NT Server, Ethernet	NT Server	Ethernet	Ethernet
RDBMS	Oracle	Oracle	Oracle, Microsoft SQL Server	Oracle	Oracle, Microsoft SQL Server	Oracle	Sybase SQL Server	Microsoft SQL Server	Microsoft SQL Server
System software and support	Web development	Web development	Web development	Network management	Network management, Web development, security, year 2000 conversion	Network management	Web development	Year 2000 conversion	Network management, security

Source: *Computerworld*'s Annual Jobs Forecast Survey of 270 IS hiring managers, with 30 from each region

HELP-WANTED ADS YOU'LL BE SEEING

CONTINUED FROM PAGE 80

Unix and Windows NT. Of course, you're experienced in LAN, WAN and Internet/intranet applications. Skill set should include HTML, Java, Unix, Hypertext Transport Protocol, Oracle and Microsoft SQL Server.

Should have graduate degree in business. Previous experience in health care required, as is a broad-based background effectively managing an aggressively supportive IS team. Good salary and benefits.

East North Central region

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Compaq is currently seeking ROM BIOS Development Engineers interested in the design development, release and maintenance of system ROM BIOS. These candidates will interface with development groups on a continuing basis to define requirements, resolve issues, and ensure the delivery of high quality products within aggressive time constraints. Excellent communication and team skills are necessary. These positions require a BSEE/CSE and programming skills in assembly language. Dept. KJSY-CW-0102-RBDE

HARDWARE PRODUCT MARKETING MANAGERS, SERVERS AND STORAGE SOLUTIONS

These critical positions are responsible for the planning, delivery, and marketing management of the award winning high availability Compaq ProLiant, or mainstream ProSignia server product lines and their associated options and storage subsystems. High-tech industry marketing experience is preferred and a track record of successful product life cycle planning is desired. Areas of special interest are mass storage, RAID array controllers, adapter cards, server options, and rack mounted server. MBA or equivalent with a technical undergraduate degree is preferred. Dept. EMBY-CW-0102-HPMM

SOFTWARE PRODUCT MARKETING MANAGERS, CLIENT/SERVER SOFTWARE SOLUTIONS

These positions are responsible for the planning and marketing management of Compaq client/server software products and solutions. At least 2 years' of software product marketing experience is preferred along with a track record of successful product life cycle planning. Areas of special interest are major OS platforms, connectivity, remote access, systems and network management, vendor alliances, ISV partner marketing and major enterprise applications such as SAP or database applications such as Oracle and Informix. MBA or equivalent with a technical undergraduate degree is preferred. Dept. EMBY-CW-0102-SPMM

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Positions are available for entry-level and experienced professionals. You need one or more of the following: C, C++, Visual Basic, Visual C++; Sybase, Oracle, Paradox, Delphi, Unix, Windows NT, OOA, OOD, OOP, systems engineering, project/task management, integration and testing, and Web-based technologies: JAVA, JavaScript and IntraBuilder. SSBI required. (Job Code B1)

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70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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22. Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech Planning, Administrative Services
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70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Internet Products ❒ Yes ❒ No

4. Which of the following software products do you buy, specify, recommend or approve the purchase of? (Please check all that apply)
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90. Other Titled Personnel

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Internet Products ❒ Yes ❒ No

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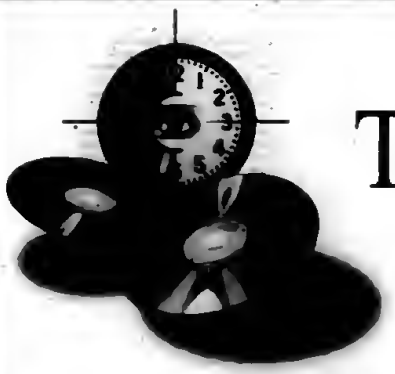

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Requires at least 3 yrs. GUI programming in VISUAL BASIC, CRYSTAL REPORTS, and ACCESS. POWERBUILDER experience is a plus.

DATABASE ANALYST - 76, 20
Requires 2-4 yrs. experience with DB2 database design, development, and management support. Experience with INFORMIX, ORACLE, SYBASE, IMS or some other RDBMS would be a plus.

NETWORK POSITIONS - LAN/WAN

SR. NETWORK ENGINEERS - 44, 45
Design, install and test data network topologies. Oversee capacity planning, perf & measuren. diagnoses & debugging. Experience with WAN, routers, hubs, switches, video, networking, TCP/IP, SNA, IPX, Frame Relay, ISDN, Modems, CSU/DSUs. Understanding of satellite and LAN concepts required. Pager after hours – some travel. Cisco Router Cert. a plus.

SR. COMMUNICATION NETWORK ANALYST - 76, 87
Design, install, test voice topologies. Working knowledge of voice communications technologies. ACD-Voice Mail-Voice Network familiarity. Understanding of IVR and telephony integration concepts. Pager after hours – some travel. General understanding of WAN and related hardware/software required. AT&T Definity PBX and Intuity V.mail familiarity a plus; Cisco Router Cert. preferred. Light data considered.

We offer a very attractive salary/benefits package. Mail/fax resume, indicating position of interest, with salary history to: **W.W. Grainger, 7300 N. Melvina, Niles, IL 60714-3898. Fax: 847-647-5888.** EOE M/F/D/V

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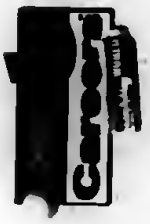

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Qualifications include a bachelor's degree or equivalent, performance/tuning capabilities, and leadership and mentoring skills. One position requires extensive experience in an RS6000 environment; the other, a thorough background in Tandem. Experience in VTAM, NCP, RS6000 SP/2, Filenet or AS400 is a plus.

First Bank offers a competitive salary and opportunity for growth in a professional setting. Please send resume with salary requirements to: HR-ENER0108-NR, 1200 Energy Park Drive, St. Paul, MN 55108 or fax to (612) 962-1540, or email to NREYNOLD@MR.Net

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First Bank System is an equal opportunity employer dedicated to affirmative action and a diverse workforce

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Andersen Consulting is an international management and technology consulting organization whose mission is to help its clients change to be more successful. The organization works with clients from every industry to integrate their people, processes, strategies and technologies. **The Center for PeopleSoft Solutions (CPSS)**, located in Minneapolis, Minnesota, works with Andersen Consulting industry teams to provide clients with custom solutions based on PeopleSoft's product line. CPSS brings together the best industry expertise and highly skilled consultants to develop world-class business solutions using PeopleSoft HRMS and Financials applications.

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Andersen Consulting values professional growth and recognizes that providing a variety of career directions benefits our people and our clients. The following positions are available within CPSS.

Development Analyst—Become an expert at customizing PeopleSoft panels and processes using PeopleSoft's development tools including PeopleTools, SQL/SQR, PeopleCode.

Design Consultant—Become a leader at designing and building the best solutions using PeopleSoft's HRMS or Financials applications.

Project Manager—Manage a team of analysts and consultants dedicated to providing the best business solutions for clients implementing PeopleSoft HRMS or Financials applications.

Technical/Installation Support Analyst—Responsible for setting up databases, application software and workstations for the PeopleSoft products in the Center for PeopleSoft Solutions and at client sites.

Instructional Technology/Instructional Design Consultant—Join a team in designing and building the best learning and support solutions for client implemented PeopleSoft HRMS or Financials applications.

You may be the candidate we are seeking if you possess at least one of the following:

- Experience with PeopleSoft Financials and HRMS modules.
- Technical background in PeopleTools, PeopleCode, PS Query.
- Experience with PeopleSoft technical support, installation and upgrades. UNIX experience.
- Experience with technology based learning solutions.

If you possess these skills and want to join a fast-growing, leading edge group of professionals, please fax 612-334-4710 or forward your resume in confidence to: Recruiting Department - CPSS, Andersen Consulting, 45 S. 7th St., Mpls, MN 55402. Please reference Job #PS-010197-03. Andersen Consulting offers a comprehensive salary and benefits package, excellent training, and unparalleled opportunities for career growth. For more information, contact us at: http://www.ac.com

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DIRECTOR
INFORMATION TECHNOLOGY

A leading manufacturer of health care-related products, with sales in excess of $130 million, is seeking a visionary leader to develop and implement a strategic Information Technology Plan to help achieve corporate growth and profitability objectives.

Reporting directly to the CFO, the selected candidate will have full responsibility for IT programs including user support, system management, client/server, PC network, communications, database management and applications development.

Qualified applicants will possess 5-10 years IT experience at the management level, strong leadership skills and a solid understanding of state-of-the-art computing technologies. A BS/MS in Computer Science or related technical degree, demonstrated business knowledge (MBA highly desirable), MRPII experience, and formal project management skills are required.

We offer a competitive salary, outstanding benefits and opportunity for personal and professional growth. For immediate consideration, please send your resume, in confidence, to: **CW 18701, c/o Computerworld, 500 Old Connecticut Path, Framingham, MA 01701-9171.**

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CATIA Specialist wanted to provide training and expertise to personnel on the IBM software package CATIA as a computer aided design, engineering and manufacturing tool for the auto industry. Reqs. 3 yrs exp in job offered, or 3 yrs. related exp as Design Engineer, exp must include use of IBM CATIA software package as a computer aided design tool for the auto industry. 40 hrs/wk, 8 am - 5 pm; $47,000/yr. Send resume to 7310 Woodward Ave. Room 415, Detroit, MI 48202. Reference No. 145796. "Employer Paid Ad."

Systems Engineer. 40hrs/wk, 8am-5pm. $60,000/year. Design, develop, test, & implement Object Oriented Database Design using C++ programming in a Unix environment for use in telecommunication switching processor platform, & switching control point (all part of advanced intelligent network AIN) Design program & administer database. Review database & solve problem if needed. Requires a Bachelor's in Electrical Engineering or Computer Science & 1 year experience in the job offered. Naperville, IL area. Send 2 copies of resume to Mr David Brown, Information Industries, Inc., 1200 Jorie Blvd., #350 Oak Brook, IL 60521

We're not a bank. We don't issue cards. We don't set interest rates. Stop thinking of MasterCard as a financial institution and start seeing us for what we are–one of the world's most technologically sophisticated global payments franchisees. We are the technical professionals who enable over 22,000 member financial institutions to offer a full range of payment products such as credit cards, on-line and off-line debit cards, ATM cash access and more. In a nutshell, we're the brains behind the bucks!

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- Frame Relay
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Don't get us wrong–we think boxes are fine for containing things. But at OfficeMax, nothing can contain our growth–or the expansion of our IS team this year. With almost 100 new stores opened in 1996, another 125-150 set to open in 1997, and 75 IS positions being created in the coming months, our plans are as ambitious as yours. And as we build on our nationwide leadership in the sale of electronics, business equipment and furniture, printing services and office supplies, we can offer you a place to build on your own record of professional leadership.

Join us as we migrate to Oracle and advance our Internet development projects.

We're creating an environment that's extraordinary not just for its sophisticated operating system and projects, but for the quality of the company's commitment to IS development. Here, with the full support of our Senior Management, you'll have the opportunity to take on new challenges, move up to new levels of responsibility, and make the most of our promote-from-within policy.

If you have 4GL (preferably Oracle) development, RDBMS administration, UNIX setup and administration, LAN/WAN setup and management, html, java, and other client server skills in areas such as retail, call centers, distribution and electronic commerce, consider our immediate openings for:

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Oracle Developers
Oracle Database Administrators
LAN/WAN Administrators
Internet/Intranet Developers
Data Center Management Personnel
Project Planner/Managers
Business Analysts
Project Directors

In addition to ongoing professional opportunities, we offer the advantages of living in a pleasant suburb of Cleveland, Ohio, where you'll have access to affordable housing, quality education and recreational options that range from major league sports to varied cultural attractions.

For immediate consideration, forward your resume to: Jo Price, Corporate Recruiter, OfficeMax, Inc. 3605 Warrensville Center Rd., Shaker Heights, OH 44122. E-Mail:careers@officemax.com, Attn: Jo Price. Equal Opportunity Employer.

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Direct Marketing Technology, a leader in the direct mail industry, provides customized databases and statistical modeling to a variety of clients. Our expertise in narrowing target groups and improving our clients' circulation has earned us a reputation that is unmatched by our competitors. Due to recent expansion, we seek innovative individuals to add to our list of success stories.

Database Analysts

Using flat file and complex relational database design, you will develop, implement and maintain processing systems. Additionally, you will validate, update, document and oversee the reporting of assigned databases. Qualifications include a degree and a minimum of 2 years experience of mainframe programming/analysis and DB2.

Our list of opportunities keeps on growing. We offer a competitive salary and industry-leading benefits including medical/dental/life insurance, 401(k), tuition reimbursement, paid vacations/holidays, employee assistance, company sponsored employee activities and more in a casual dress environment. For consideration, mail/fax resume, indicating position of interest, to: **Direct Marketing Technology, Attn: HR-CW114, 055 American Lane, Schaumburg, IL 60173, FAX: (847) 517-6588.** Equal Opportunity Employer M/F/D/V

Direct Marketing Technology, Inc.

Computer Consultant: Develop, test and document C/C++ code in UNIX operating system with scientific applications (full life cycles). Develop user friendly C/C++/UNIX/ORACLE code to analyze scientific data using statistical analysis and probability theory. Port/Merge libraries from one UNIX system to the other. Develop interactive/embedded ORACLE/SQL/SQL*PLUS database in C/C++ environment in order to store data information & results of different analyses. Modify & maintain the existing codes in order to support the client's needs. Some projects may be performed at client sites in various geographic locations. Minimum Requirements: Master's of Science in Computer Science, Mathematics or Physics. Must have completed one course each in: 1) Math Physics 2) Statistics, 3) Fundamentals of Computers & Programming. Must have completed a major project in statistical analysis using C/C++ in UNIX. One year experience in the position offered or as a Research Assistant. Experience must include developing, testing and documenting software in UNIX using C/C++ & SQL database. 40 hours per week, 8:00 a.m. to 5:00 p.m. Rate of pay: $38,000/year. $26.00/hour overtime. Must have proof of legal authority to work permanently in the U.S. Submit 2 copies of both resume and cover letter to the Illinois Department of Employment Security, 401 S. State Street - 3 South, Chicago, IL 60605. Attn: **Brenda Kelly, Ref. #Y-IL6793-K.** An employer paid ad. No calls.

DIRECTOR OF INFORMATION SERVICES

ENOGEX, INC., an Oklahoma City-based energy company is seeking a qualified professional with a proven track record in an information services management capacity to direct its I.S. Department. Bachelor's degree in Business or Computer Sciences is required with a minimum of 8 years in systems and programming and a minimum of 5 years in a management capacity. MBA is desirable.

Please send resume and references in confidence to:

[redacted]

DATABASE ANALYST

We support IBM mainframe legacy systems (IMS, CICS, DB2), Imaging, Sapiens, and Mainframe/GUI development. We are implementing technology and tools for data warehousing, repository, and client/server projects. Requires a bachelor's degree in computer science or related field plus three years related DBA experience.

SR. PROGRAMMER ANALYST

Proven skills required are COBOL, CMS, CICS, DB2, MVS, JCL plus a degree in related field or equivalent experience plus 3-5 years of progressive experience in programming and analysis.

Send resume to BCS, P.O. Box 3155, Little Rock, AR 72203
FAX # (501) 666-4510 TDD #(501) 666-3001
Job Information # (501) 666-7000
EMAIL: BRAC@ARIS.ARLIS

For additional jobs visit our WWW site at: http://www.arkansas.net/bcs/brweb.html

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At least two openings exist for a Software Engineer for a Computer Services Consultation firm. Duties include: Design, develop, test, implement and maintain computer engineering applications and Relational Database Management Systems (RDBMS) using ORACLE, SQL, PL/SQL, and SQL Forms. Perform UNIX administrative operations on SUN Operating Systems. Develop Interactive Voice Response (IVR) data processing and computer engineering applications for customers. Perform software engineering functions in 'C' language. Requires a Masters Degree in Electrical Engineering or Computer Science to include experience in development and testing of computer engineering applications as demonstrated by advanced course work in the following: Database Systems, and - Computer Communication Networks. Requires eleven months in the job offered or eleven months experience as a Software Engineer to include experience in the development of software architecture and computer applications with the following: 'C' language and UNIX which can be acquired as part of academic training or subsequent to it. Salary is $45,000.00 per year. $21.64/hour overtime. Hours are 8:00 am to 5:00 pm, forty per week, overtime as necessary. Must have proof of legal authority to work permanently in the United States. Send resume to Illinois Department of Employment Security, 401 South State Street, 9 South, Chicago, IL 60605. Attn: Joan Sykstus. Ref #V-IL 15525-S. No Calls. An Employer Paid Ad. Send 2 Copies of Both Resume & Cover Letter.

Software Engineer. 40hrs/wk, 8am-5pm. $40,000/year. Analyze, design & develop call accounting &5ESS (Class 5 Electronic Switching System) Switch AMA (Automated Message Accounting) toll, local toll, wireless, & operator services features for International & US markets. Create mathematical models to determine effectiveness of design. Implement software & system. Tools used include: Unix, C/C++, TCP/IP Scripts, RDBMS (Relational Database Management System) Test software & system & adjust as needed. Requires MS in Computer Science & 5 months experience in the job offered or as a Programmer/Analyst who utilized above named tools. Naperville, IL area. Must have proof of legal authority to work permanently in the US. Send 2 copies of resume to Mr. David Brown, Information Industries, Inc., 1200 Jorie Blvd., #350, Oak Brook, IL 60521.

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SUPERVALU
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Even though we're the nationally recognized leader in food distribution and retailing, SUPERVALU continues to push the limits. After all, we became a $16.5 billion leader by out-thinking the competition, by embracing new ideas, and by doing things a little differently.

SUPERVALU relies heavily on the latest technology to effectively service our customers. To ensure our continued success we are in the process of creating distribution and marketing systems using state-of-the-art technology and logistics. We also continue to support our legacy systems.

As a result, we are currently seeking candidates for the following open positions:

SYSTEMS & PROGRAMMING

- Programmer Analysts
- Systems Analysts
- Sr. Systems Analysts
- Lead Systems Analysts
- Data Analysts
- Programmers

COMPUTER SERVICES

- E-Mail Support Manager
- DBA'S
- LAN Specialists
- MVS Systems Programmers
- MVS Computer Operators
- Client Server Testers
- Technical Analysts
- Sr. Technical Analysts

SUPERVALU offers a competitive salary and comprehensive benefits package, relocation, and unlimited training and career-growth opportunities. To learn more about SUPERVALU, visit us on the Monster Board at www.Monster.com or send your resume to:

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We are an energy pioneer. Wisconsin Electric is the [illegible] subsidiary of Wisconsin Energy Corporation [illegible] in Milwaukee, Wisconsin. We're a $1.77 [illegible] company with more than one million customers. [illegible] anticipated merger with Northern States Power [illegible] Minneapolis, MN will offer many IT career opportunities.

We emphasize on-going training and rotational assignments to give our employees exposure to a number of different areas. We offer an above average compensation package. We'd like to talk to you if you have a bachelor's degree in Computer Science, Management Information Systems or a related discipline & strong skills in any of the following:

Please forward your resume to:

Email:
Lora.Hyler@wepco.com

Fax:
(414) 221-3749

Mail:
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333 W Everett St. A366
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- **MAINFRAME AND PC APPLICATION DEVELOPMENT** - COBOL, Command Level CICS, Natural, Client Server, Powerbuilder, Delphi, Visual Basic, Peoplesoft, Lotus Notes, Microsoft, Composer/IEF, DB2
- **SYSTEMS PROGRAMMING** - MVS, AIX, OS/2, Windows, CICS, MQSeries, Storage Management, Capacity Planning
- **DATABASE ADMINISTRATION** - DB2, ADABAS, Sybase, MS/Access, Paradox
- **NETWORK SYSTEMS** - Frame relay, token ring, VTAM, SNA, TCP/IP, Novell, Cisco
- **DEVELOPMENT TECHNOLOGY SUPPORT** - Specialized development, methodology support, technical training, database modeling, architecture planning, information warehousing, voice recognition, imaging, Lotus Notes support

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ATTENTION OUTDOOR ENTHUSIASTS

Live the good life while maintaining the corporate edge...

Due to continued growth and expansion, Adelphia Cable Communications, one of the nation's largest and most progressive cable operators, has an opening for a Lead Systems Analyst and Programmer/Analyst to work at its Corporate office in Coudersport, PA, located in the rural, northcentral mountains of PA. Adelphia offers a competitive salary and an excellent benefits package.

LEAD SYSTEMS ANALYST (CC6729/CW)

A bachelor's degree or equivalent in Computer Science, Electrical Engineering, MIS or Mathematics is required. A bachelor's degree or equivalent in Business or Accounting with either an advanced degree or professional certification (e.g., CPA) or two years computer programming experience is preferred. Experience as a project manager on systems development projects is preferred. Five to seven years programming and/or analysis experience, and experience with all aspects of the systems design life cycle (e.g., requirements definition, conceptual and detail design, programming, testing, training, and implementation) is preferred. Work experience with relational database programs (ORACLE) and rapid application development tools (PowerBuilder) are preferred. Accounting and/or operational knowledge of the cable industry and experience with rapid prototyping and object-oriented programming techniques are preferred. Must be able to occasionally travel by car or plane.

PROGRAMMER/ANALYST (CC6730/CW)

A bachelor's degree or equivalent in Computer Science, Electrical Engineering, MIS or Mathematics is required. A bachelor's degree or equivalent in Business or Accounting with either an advanced degree or professional certification (e.g., CPA) or two years computer programming experience is preferred. One to three years programming and/or analysis experience, and experience with some aspects of the systems design life cycle (e.g., requirements definition, conceptual and detail design, programming, testing, training, and implementation) is preferred. Work experience with relational database programs (ORACLE) and rapid application development tools (PowerBuilder) are preferred. Accounting and/or operational knowledge of the cable industry and familiarity with rapid prototyping and object-oriented programming techniques are preferred. Must be able to occasionally travel by car or plane.

NOTE: Successful applicant must pass a drug test, physical examination, criminal background check and driver's record check. Resumes will be accepted until January 12, 1997, or until filled thereafter. Interested applicants should submit a resume to:

ADELPHIA CABLE COMMUNICATIONS
ATTN: RECRUITING DEPARTMENT
5 WEST THIRD STREET
COUDERSPORT, PA 16915

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Adelphia

DIRECTOR INFORMATION SERVICES

Penford Products Company, a leading manufacturer of specialty carbohydrates is seeking a highly skilled Director of Information Services to join their management team in Cedar Rapids, IA. The successful candidate will implement and sustain systems, networks and applications initiated by the corporate technology group, and will lead the IS organization and their clients to achieve key strategic objectives. The current LAN is on Novell, and will migrate to a WAN with UNIX Sun Solaris operating system with Informix database and Baan ERP applications. Additional software will be integrated with Baan to support plant maintenance, environmental health, and human resources. This position does not require a technologist, but experience with UNIX is a plus. Leadership skills with technical and business process understanding is required.

Penford Products offers the advantages of our Cedar Rapids location—an excellent family environment, with a great school system and a friendly lifestyle to match. For an exciting new career opportunity in 1997, please submit your resume to: **HR Recruiter, Penford Products, Box 428, Cedar Rapids, IA 52406-0428.** EOE.

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website: www.perotsystems.com

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Issue:
April 1997

Recruitment Advertising Close:
March 4, 1997

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ANSWER THE CALL

Sprint Personal Communication Services℠ (Sprint PCS) is taking bold strides into the 21st century as the creative force behind the evolution of wireless communications services.

Our corporate headquarters are located in Kansas City, currently ranked one of the most affordable housing markets in the country. Kansas City offers a unique blend of sophistication, friendliness, excellent school systems and cultural excitement, providing an ideal environment in which to raise a family. We have multiple openings with significant areas of responsibility at our Kansas City corporate headquarters for:

ORACLE RDBMS & EXPRESS DATABASE ADMINISTRATORS

Responsible for Oracle multi-dimensional database and/or RDBMS design and administration. You will provide consultation on Oracle database structures, rules, capabilities and domain values, as well as assistance to developers/users in ensuring proper access, design, operations and problem resolution. Responsibilities include resolving security issues in large and complex databases, ensuring appropriate back-up and recovery procedures for each database design. Oracle Express candidates must have 2 or more years Oracle Express multi-dimensional database design and administration experience. Oracle RDBMS candidates must have 4 or more years database design experience. Back-ground in administering very large databases is a plus. Bachelor's degree in Business/Computer Science preferred. **Job Code: ODA**

DIRECTOR OF INFORMATION TECHNOLOGY CUSTOMER SERVICE

Provides Information Technology support to the Sprint PCS "Customer Care" organization. You will act as "CIO" to Customer Care and as its liaison with the Information Technology organization to facilitate development of business systems which will provide functional support and add competitive advantage to the company. The qualified candidate must have in-depth knowledge of customer service business processes, with 10+ years experience directing Information Technology resources and development projects. MBA is highly desirable, especially if the undergraduate degree is in a technical discipline. **Job Code: DCS**

PRODUCT LAUNCH TEAM MANAGERS INFORMATION TECHNOLOGY

These positions will be responsible for participating on dedicated cross-functional product development teams to ensure that information technology systems and procedures support the planning and development of Sprint PCS product sets. Immediate positions are available related to call features, wireless messaging, CDMA/AMPS roaming, Over-The-Air Service Provisioning (OTASP) and data applications. The successful candidate will be a high-energy manager with excellent information technology systems knowledge and significant product development expertise. Strong verbal and written communication skills essential. MS in Computer Science/Engineering or an MBA is highly desirable. **Job Code: PLT**

Sprint PCS offers an outstanding compensation and benefits package. If your career goals are challenge and exploration, then Sprint PCS invites you to share the future with us. Send your resume, specifying job code, to: **Sprint PCS, Dept. TCW, P.O. Box 471148, Aurora, CO 80047-1148, FAX 303-766-8841. Or e-mail responses to: pcs300@sprintspectrum.com (Microsoft Word or ASCII formats preferred). No phone calls, please.** We are proud to be an EEO/AA employer M/F/D/V. Also, we maintain a drug-free workplace and perform pre-employment substance abuse testing.

Sprint Sprint PCS℠

Connecting the ISS Andersen Worldwide Organization

Andersen Worldwide, a global professional services firm, is looking for high quality, motivated personnel to work in our Technology Support, Mainframe Application Development & Testing, LAN and Internet Administration and Product Management areas. Information Systems Services (ISS) plans, develops and manages the internal information systems for the Andersen Worldwide Organization. ISS supports the organization's two business units, Arthur Andersen and Andersen Consulting, by working with them to deliver the most advanced and appropriate computer and communications-based tools, facilities and data.

All positions require strong analytical and problem-solving skills, excellent written and verbal communication skills and proven ability and interest to learn new technologies. A BS/BA degree or equivalent experience is required. All positions are located in downtown Chicago.

TECHNOLOGY SUPPORT - HELP DESK

The technical support associate provides technical and operational support via telephone to Andersen personnel throughout North and South America. The scope of support includes PC-based office automation tools, communications networks and financial applications in a mainframe environment. The ideal candidate will be dedicated to providing the highest quality customer service, and be familiar with technical environments including PCs, client/server, local area networks and mainframe systems. ***(Ref. Code: 12AT-BARN)***

MAINFRAME APPLICATION DEVELOPMENT AND TESTING

The ideal candidate will have 6-24 months experience with the development and testing of business applications such as General Ledger, Financial Reporting, Time Reporting and Payroll in a mainframe environment. Responsibilities will include preparation of detailed code-level design, programming, testing and documentation. Experience or knowledge of COBOL, CICS, SQL, JCL, DB2 and TSO is preferred. ***(Ref. Code: 12AT-MAIN)***

LAN ADMINISTRATION

The LAN Administration and Support Associate share responsibility for a LAN environment which includes NetWare, Windows NT, Lotus Notes, Microsoft SQL and Sybase SQL servers. The ideal candidate should possess hands-on experience in the administration and technical support of a Novell NetWare LAN environment. Working experience with the other listed server platforms is a plus. The candidate will join a highly progressive team which is responsible for the design, installation and support of a growing enterprise-wide server environment. ***(Ref. Code: 12AT-LANADM)***

FIREWALL & INTERNETWORK ADMINISTRATOR

An exciting opportunity exists for a candidate possessing extensive experience on Internet Firewalls, UNIX Systems Administration (SUN OS/Solaris), and the TCP/IP protocol suite. The candidate would also have experience and proven skills in at least three of the following areas: Network management/SNMP including HP OpenView and Sun Net Manager, external e-mail connectivity and Sendmail configuration, C/C++ Programming and/or advanced UNIX shell scripting, Lotus Notes, and Cisco Routers and routing fundamentals (e.g. access lists/filtering of TCP/IP traffic on routers). A Bachelor's degree in Telecommunications, Computer Science or Information Systems is required. ***(Ref. Code: 12AT-FAI)***

PRODUCT MANAGEMENT

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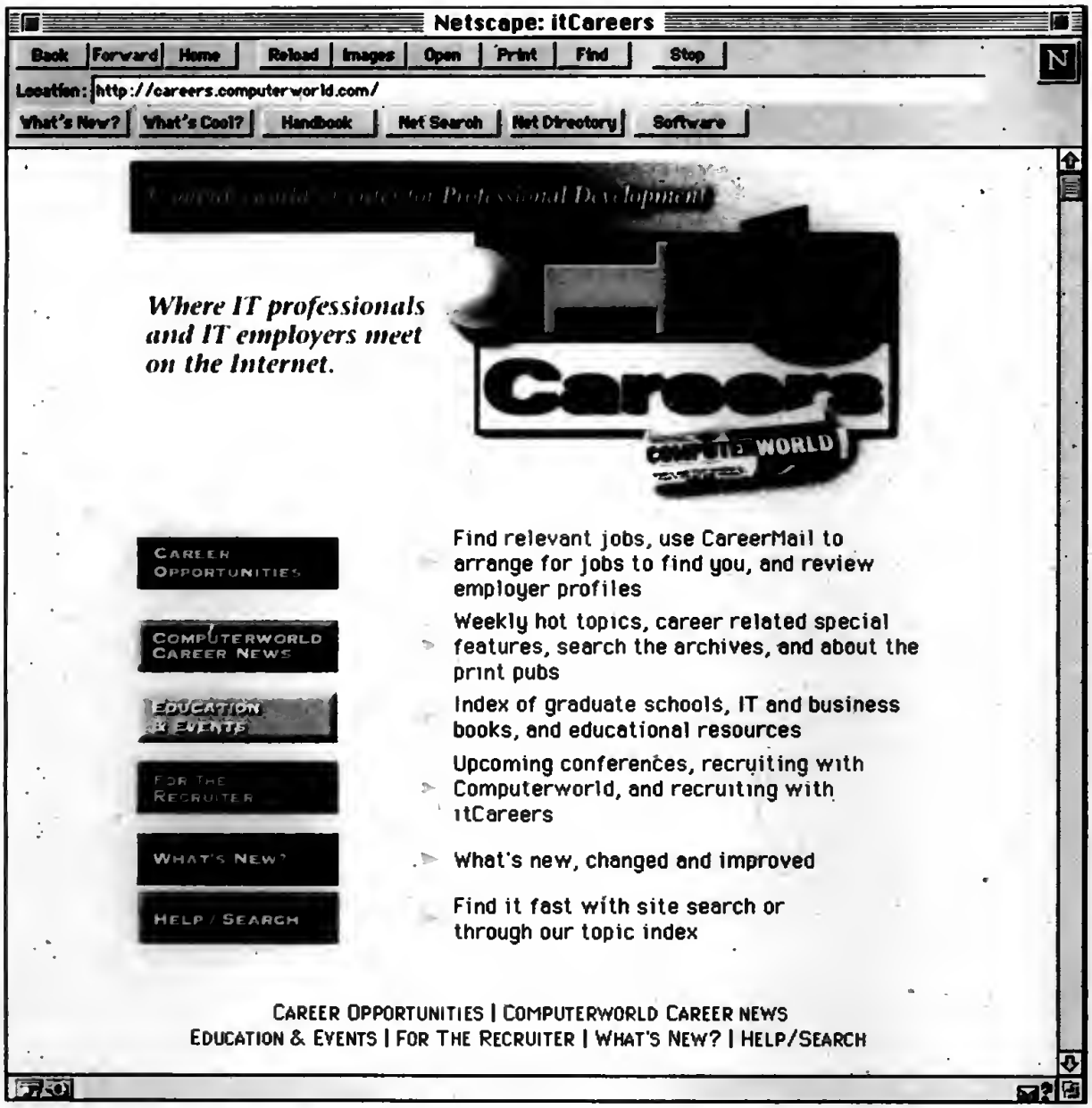
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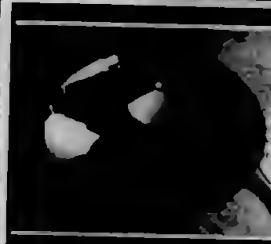

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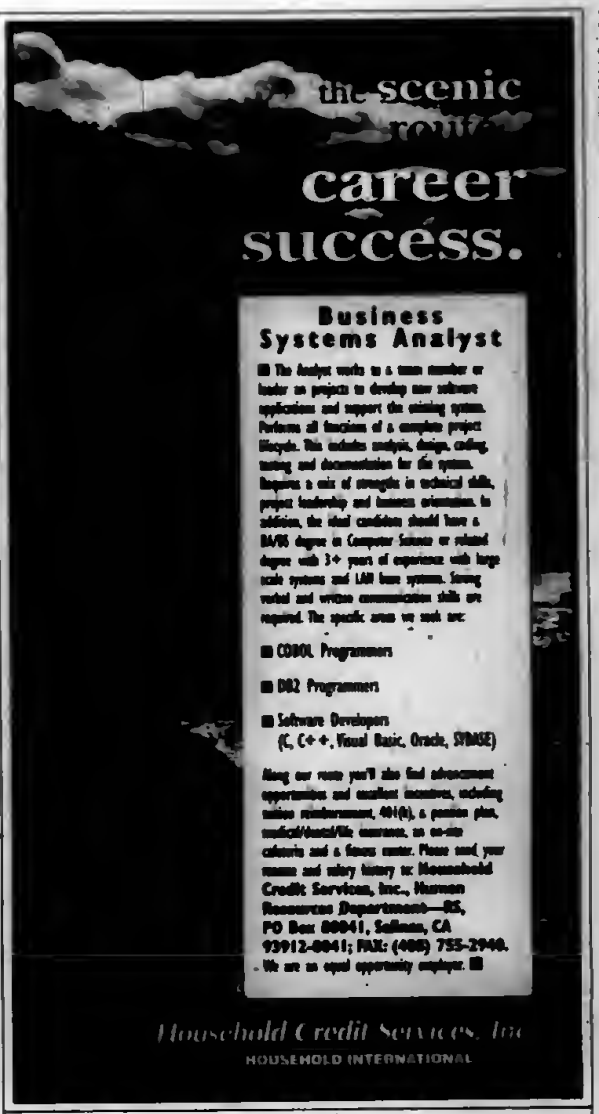
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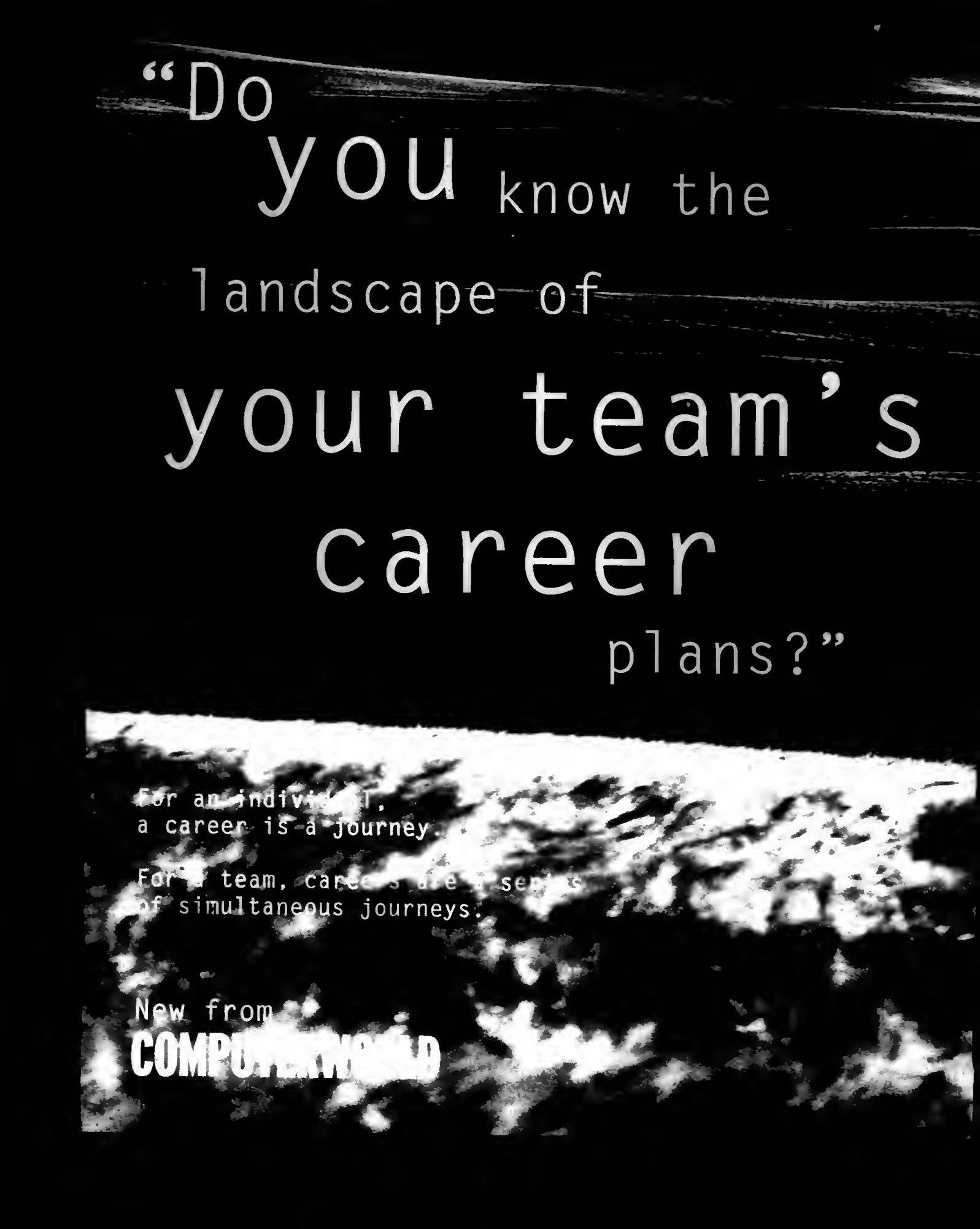
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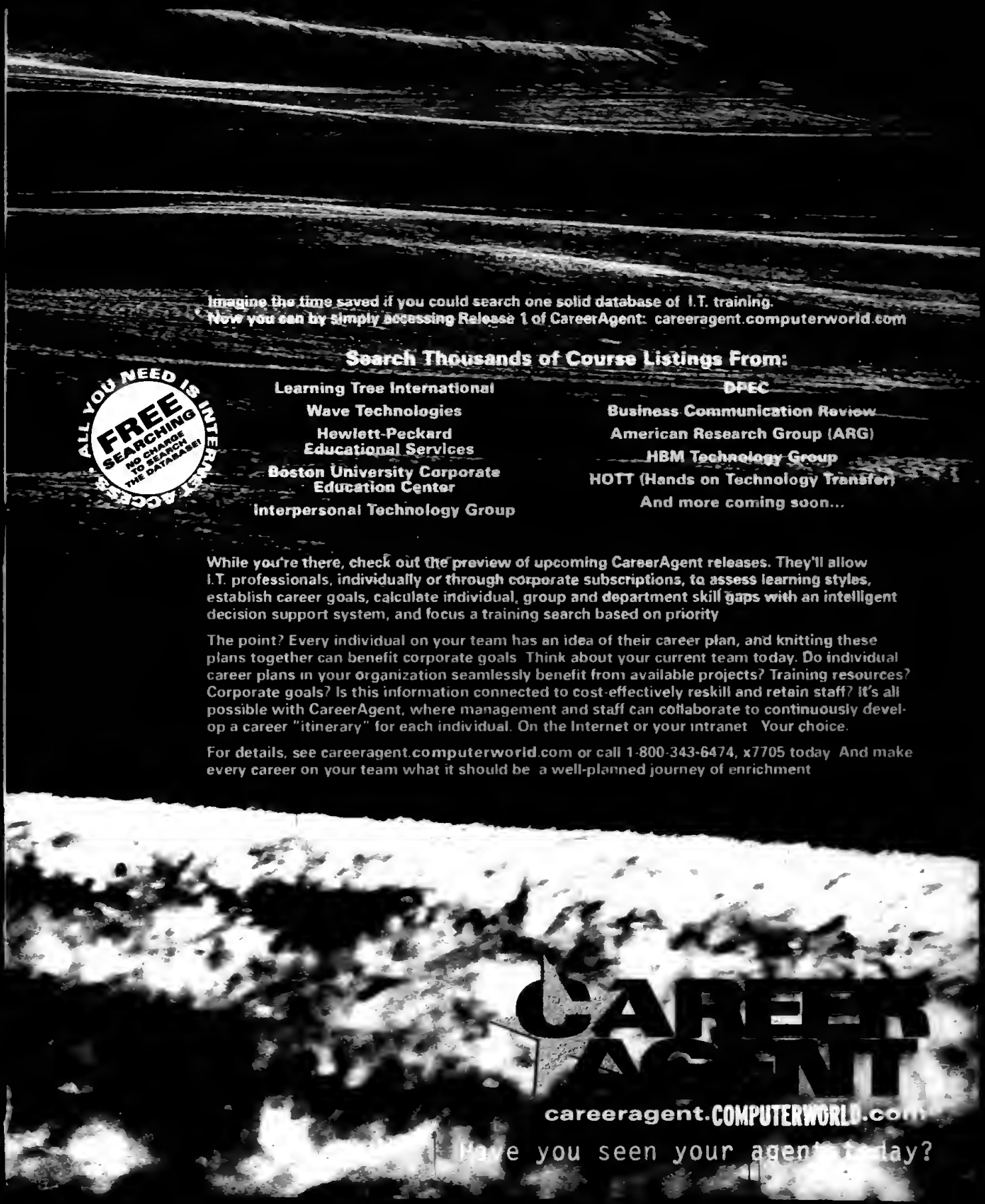
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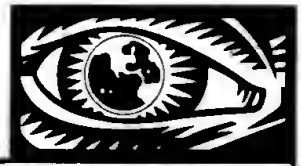

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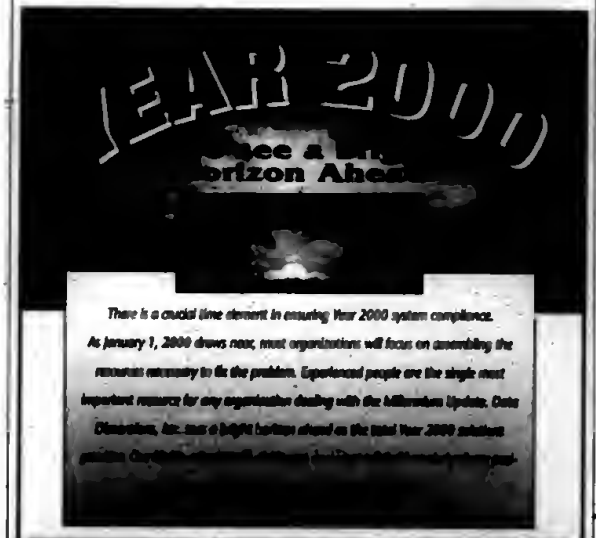

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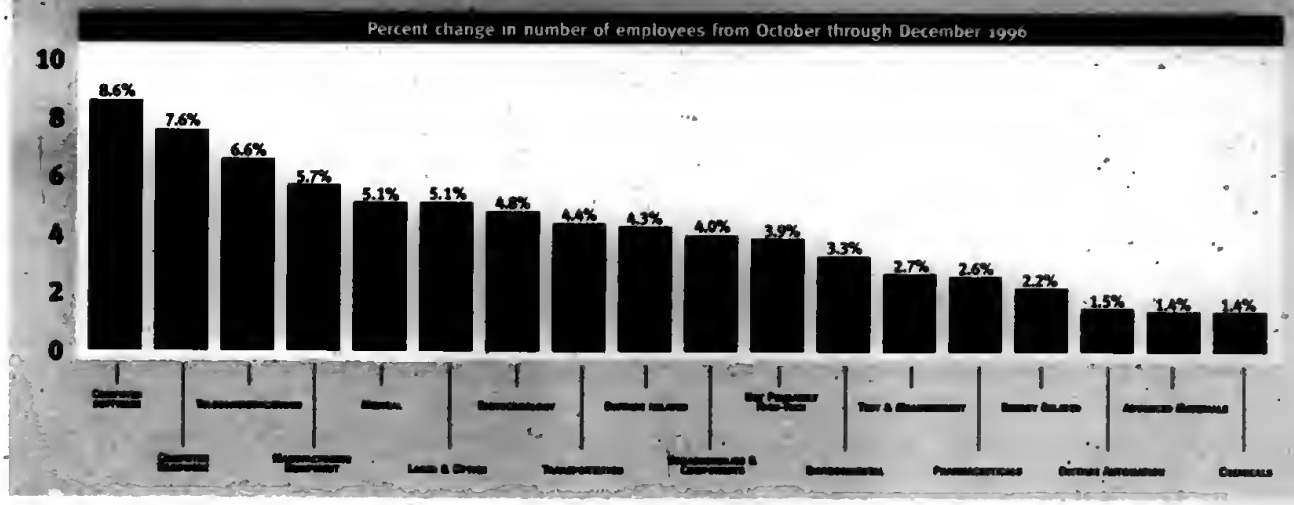

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Marketplace

Internet

PHONES ON HOLD

By Kate Evans-Correia

AS THE OLD SAYING goes: "You get what you pay for." So goes Internet telephone technology. Placing a call over the Internet is inexpensive — pennies compared with the dollars spent on traditional telephone lines — but the quality of the connection is often poor, sometimes inaudible.

Part of the problem is lack of transmission speed — that's why the connection is poor, according to Joe Outlaw, an analyst at Datapro Information Services Group in Delran, N.J. A typical Internet connection is made at 14.4K bit/sec. or 28.8K bit/sec., with average transfer rates between 1,500 and 3,000 bytes per second. Traditional telephone transmissions are about 8,000 bytes per second.

However, improvements in the coder/decoder (codec) software, which decodes the compressed signal at the destination site, are being made, Outlaw says. "As the codec gets better, the Internet quality will get better," he says.

Another problem is that talking on an Internet phone can be more akin to talking on a shortwave radio — only one person can talk at a time, or conversations overlap.

The reason: Most sound cards in desktop computers are half-duplex; traditional telephones are full-duplex. But a handful of vendors, including Quarterdeck Corp. and VocalTec, Inc., feature full-duplex software. Because of other factors, such as transmission speed and codec, the connection still isn't as good as a traditional phone, but it's greatly improved, analysts say.

More limiting than speed and sound for many users is the fact that they can connect only with users of the same Internet phone software. However, most analysts are betting that the emerging standard for low bandwidth, H.323, will make lack of interoperability a thing of the past. Intel Corp.'s Internet phone software currently supports H.323, and IBM, Microsoft Corp. and others say they'll support the standard in future products.

NO THREAT TO CARRIERS, YET

Although there has been some commotion from the telephone companies about the use of Internet phones, the impact on phone companies will be marginal, according to Mark Winther, an analyst at IDC/Link, a consultancy in New York.

But analysts agree that despite the shortcomings of Internet phones, quality will improve and fuel widespread use within corporations.

Fewer than 500,000 people make Internet phone calls regularly, Winther says, but that number is expected to rise to 16 million users by 1999. International Data Corp., a market research firm in Framingham, Mass., estimates that by 2000 as much as 16% of all phone calls will be made via the Internet.

The use of Internet phones today is mostly for hobbyists. For most businesses, the low cost isn't enough to compensate for poor quality.

As the technology becomes fine-tuned, the industry will see Internet videoconferencing, and with it, shared whiteboards, chat, file transfer and audioconferencing, says Jeff Pulver, an analyst at Pulver.com, Inc. in Great Neck, N.Y. Internet phones will "reinvent the party line," he says. Users eventually will talk from computer-to-computer, computer-to-phone and phone-to-phone using the Internet.

Evans-Correia is a freelance writer in Ashland, Mass.

BEFORE SELECTING AN INTERNET PHONE

Analysts suggest buyers check out these criteria first:

- Does it have good-quality sound with minimal delay times? (You want it to sound as close to a real telephone call as possible.) Does it feature full-duplexing?
- Does it feature voice mail, answering-machine capability, call transfer, multiple-caller handling, flexible call refusal and the ability to block specific callers?
- Does it support the emerging interoperability standard, H.323?
- Does it have automated setup and easy-to-use controls?

INTERNET TELEPHONE SOFTWARE PACKAGES

The following products are a sampling of some of the more popular Internet telephone software packages on the market:

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(214) 713-2607
www.planetweb.com
List price: $89

FreeTel, FreeTel Communications, Inc.
(408) 356-0490
www.freetel.com
List price: Free

Internet Phone, VocalTec, Inc.
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www.vocaltec.com
List price: $89

Jabra-Net, Jabra Corp.
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www.jabra.com
List price: $125

WebTalk, Quarterdeck Corp.
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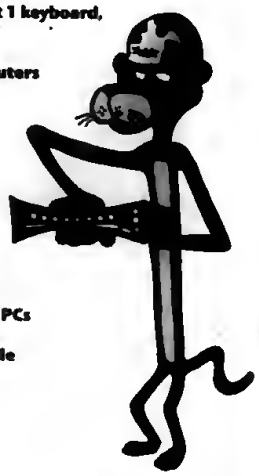

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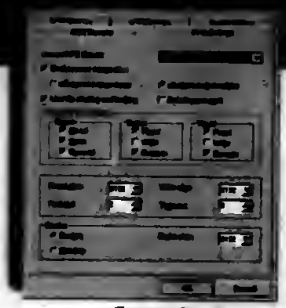

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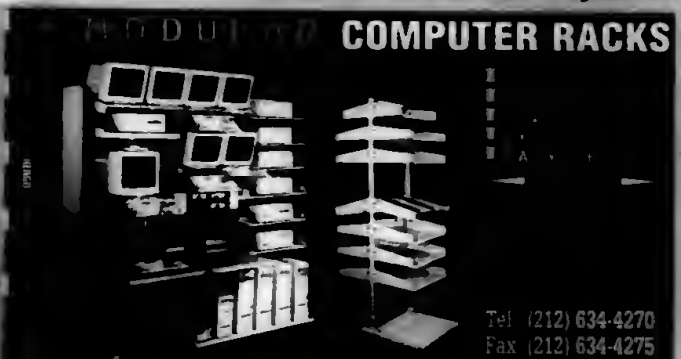

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Microsoft upgrades SNA Server gateway

By Laura DiDio

MICROSOFT CORP. last week released a new version of its SNA Server gateway software that supports twice as many host and client connections, boosts printing options and provides end-to-end security.

Users and analysts said the combination of new features gives SNA Server 3.0 a leg up on market leader NetWare for SAA, which is jointly produced by Novell, Inc. and IBM.

"I give Microsoft the technology edge based on its mainframe and printing options. And, clearly, the steep growth rate of Windows NT Server is a big incentive for corporate users to install SNA Server," said Lynn Nye, president of NetResults, Inc. in Portland, Ore. "NetWare for SAA has the largest installed base with 30%, but it will be hard-pressed to gain new installations."

GETTING RID OF OBSTACLES

Donald Czubek, president of Gen2 Ventures, Inc. in Saratoga, Calif., said the enhanced print-pooling features remove one of the major obstacles to SNA Server's implementation at large corporate accounts.

The feature allows mainframes to print to any printer in the corporate enterprise. "Without this feature, SNA Server wouldn't be an option for many businesses," Czubek said.

John Bent, branch manager at the Federal Aviation Administration in Oklahoma City, agreed. The FAA is responsible for flight standards at 120 offices worldwide and is migrating its network from NetWare 3.11 to a NT Server exclusively.

"We desperately need printer pooling. The alternative is to hard-wire every PC to the printer, and that's not feasible with 4,000 users who access hosts just 2% of the time," Bent said. "Print pooling lets us service a larger base with fewer connections to the PC and printers and simplifies administration."

Users were also enthused that SNA Server 3.0 now supports 5,000 concurrent user sessions and 15,000 host sessions. The prior version supported a maximum of 2,000 users and 10,000 host sessions.

SNA Server 3.0 runs on Windows NT Server 3.51 and 4.0.

WHAT'S NEW?

SNA Server 3.0 features:

- Enhanced print-pooling
- Single user sign-on to AS/400s and mainframe machines
- End-to-end data encryption for increased security
- Shared Folders Service gateway that lets PCs without SNA client software access to "shared folders" files on AS/400 systems
- SNA Explorer integrated administration tool that simplifies configuration and management
- Pricing starts at $1,399 for server software and five client licenses. Upgrades start at $679.

Supercomputer tops 1 teraflop

▸ *Energy Department will use machine for virtual tests of nuclear weapons*

By Gary H. Anthes
WASHINGTON

THE U.S. LAST WEEK beat Japan in a race to the Holy Grail of supercomputing — a machine that can compute at sustained speeds greater than 1 trillion operations per second (teraflops).

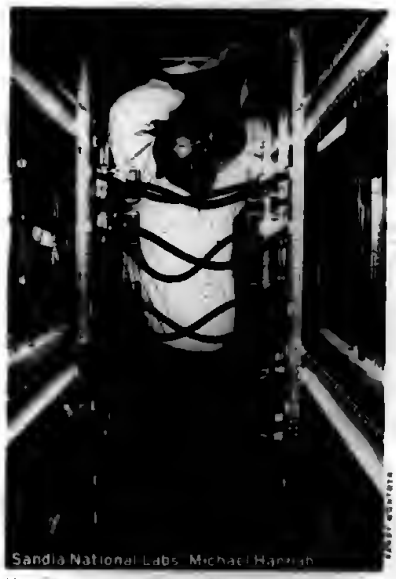
The architecture used in the esoteric new supercomputer could find mainstream commercial applications, possibly to handle electronic commerce, some observers said.

The $55 million supercomputer was built by Intel Corp. with 7,264 200-MHz Pentium Pro processors. To duplicate what the computer can do in 1 second, every person in the U.S. would have to work nonstop with hand calculators for 125 years, according to the U.S. Department of Energy, which bought the computer.

The second-fastest computer in the world, a 2,048-node Hitachi Ltd. machine at a Japanese university, runs just one-third as fast, experts said.

Intel's new, huge computer is being shipped in pieces to the Energy Department's Sandia National Laboratories in Albuquerque, N.M. It will be fully operational by the end of March, and it will be used primarily to conduct virtual tests of nuclear weapons and simulate the aging of weapons in U.S. nuclear stockpiles.

"Teraflops is a defining moment," said Gil Weigand, deputy assistant secretary for computing at the Energy Department. "This level of computing was thought to be undoable 10 years ago."



Sandia National Labs, Michael Hanrahan

He connects two of 76 cabinets comprising the new teraflops computer. The cabinets separate classified from nonclassified applications.

Observers said the computer's specialized architecture — known as massively parallel, distributed memory — is especially well-suited for the huge, number-crunching simulations used in weapons research. But it will find applications elsewhere, they said.

"This approach to high-end computing — distributed memory architecture built on top of commodity processors — has great potential for many applications, including weather and climate modeling," said Thomas Pyke, director of high-performance computing and communications at the National Oceanic and Atmospheric Administration.

David Audley, director of information systems and services at Tiger Management LLC in New York, said a scaled-down computer of the type announced last week might be just the thing for "organizations that positively cannot deny service when someone visits their Web site."

Audley said individual processors could be optimized for various kinds of World Wide Web services.

"If a bank customer wants to check his checking account balance, he could be passed to a node that does that. If he wants to pay a bill, he goes off to some other node that's optimized for that," he said.

Audley, who has pioneered the use of parallel computers for financial applications, said he wouldn't be surprised to see companies such as Microsoft Corp. or Netscape Communications Corp. develop software for that kind of environment.

Boeing

CONTINUED FROM PAGE 1

the two groups consolidate their respective information technology infrastructures.

But once that is completed, "you'd expect to see [IS] reductions," said Heidi Trost, a vice president at Computer Sciences Corp. (CSC) and the account executive responsible for CSC's Hughes outsourcing contract.

Boeing has roughly 3,000 IS professionals, and McDonnell Douglas has retained a staff of about 1,200 technologists.

Other recent defense mergers, such as Northrop Grumman Corp., formed in 1994 when Northrop Corp. acquired Grumman Corp., and Lockheed Martin Corp., formed in 1995 by the merger of Lockheed Corp. and Martin Marietta Corp., have resulted in successful IS combinations. But major hurdles had to be cleared to meld the disparate systems.

Northrop Grumman expects its merger to result in a reduction of 25% to 30% in recurring IT maintenance costs, said Jim McCann, vice president of IS services at the Los Angeles-based aerospace firm.

These mergers have given defense giants fits in their efforts to re-engineer large legacy applications to map with new business models, Trost said.

"For the most part, you're dealing with companies that are made up of a lot of pieces and personalities," she said. Cost-cutting pressures and the capital needed to revamp legacy systems to meet the new business metrics are "at odds with each other," she added.

Still, Boeing's reputation as an innovative user of IT, such as the three-dimensional computer modeling it used to develop the 777, along with its new McDonnell Douglas ties, is expected to help it land an even greater number of contracts with the Department of Defense.

Boeing's pioneering use of electronic data interchange technologies to communicate with the Defense Department, for example, has led other industry players to standardize on communications protocols with the Defense Department, said Paul Strassmann, former IS chief at the Defense Department and now a professor of information warfare at the U.S. Military Academy in West Point, N.Y.

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COMMENTARY

A few stocking stuffers for '96 . . .

David Coursey

'Tis two days before Christmas, and I'm in a mood. Some things make me happy, some things make me rude.

The industry's taking its long winter break,

And I have been asked, "What is real?" and "What's fake?"

Upon my poor keyboard, there arose such a clatter
That Steven (my editor) asked, "What's the matter?"
"I'm typing," I said, "and I think it's a crime
To start this poor column with such awful rhyme."

"Don't worry," he said over long-distance phone.
"'Tis my job to buff and to polish and hone."
"Well that's welcome news," I confessed with relief.
"Now edit me brilliant, and pithy and brief!"

So we're left with a list, without favor or fear,
Of shimmering gifties, some nasty, some dear.

•To Microsoft: A Juan Valdez-as-terrorist outfit. Juan Valdez is, as you know, the Colombian Coffee guy. This gift is just the thing for Bill to wear while he's off hijacking Java. I'll even throw in the donkey — it just seems appropriate. And a new slogan: "Hand-nuked by Juan Valdez."

•To Apple CEO Gil Amelio: The home version of the new game, Executives Say the Darndest Things. You can play the game in the privacy of your own home, so you won't have to keep saying dumb things in public. Example? "One day, everything Bill Gates has sold you will become obsolete." That was hardly a winning quote for the cover of *Forbes*. And, hey, you get a new slogan, too: "Macintosh. The computer for whomever's left."

•To Novell: A clue, to replace the ones you lost and to complete a set with the couple you've discovered on your own.

•To Lotus: A theory to go with your Domino. "First, we'll take the Vietnamese market, then Laos, then Thailand. Soon, India will fall, then we'll sweep across the Middle East to Europe and the world will be ours." I suggest you hire Robert MacNamara as your marketing VP. And may all your wars be cold ones.

•To Corel CEO Michael Cowpland: Patent rights to Santa's secret for getting the world's presents into one reindeer-powered sleigh. Corel will use this in its unending search to put all the world's software on a single CD. The real reason Corel killed its PDA plans? The company couldn't fit 10,000 clip-art images on to the device.

•To the organizers of Comdex: An evening with David Copperfield. Maybe he can teach you how to turn your how-many-people-can-we-stuff-into-Las Vegas trick into a disappearing act.

•To Larry Ellison, CEO of Oracle: A subscription to "match.com" to help you find the wife you told Oprah Winfrey's audience you're looking for. Gosh, the dating scene must be hell for a billionaire bachelor like you. At least you don't have to elbow Gates aside in the singles bars anymore now that he's hitched.

•To Be or Jean-Louis Gassee: A workshop full of elves to magically build a warehouse full of BeBoxes.

•And to my readers: A time machine so you never have to face the year 2000 problem.

He was heard to exclaim as he slid into night,
"Cheap bandwidth to all, and to all a great site!"

Coursey is an industry analyst, consultant, editor/publisher of "coursey.com" and (obviously) amateur poet. He had help with this column from Lisa Halliday, senior editor of "coursey.com." His E-mail address is david@coursey.com.

. . . and a look ahead to '97

Charles Babcock

The coming year will be a decisive one for a raft of new technologies that got a toehold in 1996. I foresee some ruthless sorting out in the communications, database and Internet environments.

But knowing the winners from the losers won't be easy. There are many new companies vying with vigorous, established ones. The Internet contributes two new layers of confusion to an already cacophonous scene. The network picture is changing so rapidly, some networking companies are jet-lagged. They don't see the extent to which Internet Protocol, particularly TCP/IP, is in ascendance. SNA, DECnet and other, older protocols are in a nosedive.

•One outfit that understands is Ascend Communications in Alameda, Calif., which keeps coming up with boxes that concentrate end-user IP connections. A combination router/switch unit, Ascend's Max TNT can handle up to 4,000 ISDN end users at a time.

Ascend is a supplier to Internet service providers and potentially an even bigger supplier to corporate intranets. The company's revenue jumped from $16 million in 1993 to nearly $500 million in 1996. Bay Networks — beware. And Cisco Systems — look over your shoulder for this upstart.

•I liked little NetDynamics before it went to the ball, and I like it still — even though it went home with Mark Andreessen. Netscape recently chose NetDynamics as its development environment partner to help round out the Suitespot tool set. NetDynamics contributes a database piece that Netscape had been missing, including the ability to multiplex queries into an online database. That's the way to give multiple Web site users simultaneous database access.

NetDynamics, by the way, gives Netscape a better chance to win its tools competition with Microsoft, which is missing the multiplexing piece. Microsoft decided to develop the tool itself, and that will take more time.

•We all know that Java, like oat bran, can cure cancer. But skilled Internet developers have begun to pinch themselves and ask if the discussioo shouldn't be a bit more realistic.

To run fast, Java requires specially fabricated chips, not just an interpreter. It doesn't run cross-platform without some work for each platform, which puts it in a class similar to C and C++. Java is network oriented, and it has a future . . . in 1998. In 1997, Java developers will go hungry.

•Wallop Software changed its name from NetBuild, and one might question if the new name has '90s-style sensitivity. Nevertheless, Wallop is a company with impact. It's less intent on selling you spot tools than on providing you with a framework into which you can integrate many tools from other vendors and then manage your Web site. I give this Foster City, Calif., start-up a good review on its Build-It development environment, and I hope the company keeps its open approach.

•With challengers showing how security can be compromised on the Internet, there's a bright future for third parties who set up Kerberos-style security. (Kerberos issues tickets from a controlled central server to authenticated users, giving them access to a specified resource.)

It's easy to do this for internal use, but an outside party must control the certification server and issue the tickets for two parties over the Internet. So far, no one has announced that they're opening their doors to do this. It's a great opportunity for those who like to maintain an air of neutrality and never liked the competitive rat race anyway.

And finally, three cheers to database vendor Informix for delivering its Universal Server — with its ability to handle multiple data types — on time (Dec. 3). For once, an Oracle competitor has stolen a march on the behemoth.

Babcock is Computerworld's technical editor. His Internet address is charles_babcock@cw.com.

The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

Tachaa-paaditry

Robert Denny, World Wide Web server guru at O'Reilly & Associates in Sebastopol, Calif., has made the following predictions for 1997:

- The intranet won't take off in 1997. Corporate adoption will gradually increase in the next three to five years.
- In the big shakeout among Internet service providers, the survivors will be large or have value-added services that are reliable and cheap.
- Microsoft will make progress in the browser market but won't knock out Netscape.
- The Internet won't collapse, but it will get more sluggish, more often.
- Java will fail to grow into a broadly accepted technology.
- Cable modems won't become popular, despite the hype.
- ActiveX in Web pages will be a lot less important than Microsoft would like.

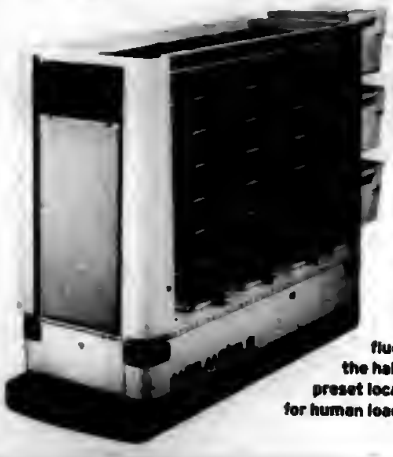
Nicholas Negroponte, the founder and director of the MIT Media Lab, is quoted in *Yahoo! Internet Life* magazine as saying, "People will get bored with surfing in 1997 because of both the 'net's performance and the fact that it is boring."

WORLD'S SMALLEST ABACUS

Scientists at IBM's Zurich laboratory have built a microscopic abacus with individual molecules as the beads. Each carbon bead has a diameter of less than one nanometer — or one millionth of a millimeter — and can be moved only by the ultrafine tip of a scanning tunneling microscope. Such nano-engineering could someday assemble more complex structures, molecule by molecule.

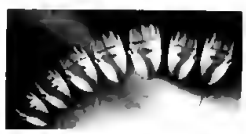
Digital's snafu

After he left Digital, *Computerworld* reader Jim Parker got a statement that said he wasn't vested in the pension plan. "You will be 100% vested ... on Dec. 31, 2299, provided you continue to work until that date," according to the statement. So he had to work there just another 303 years! Parker suspects a year 2000 problem; the real vesting schedule is five years.



The Mailmobile from Bell & Howell in Holt, Mich., can put an end to interoffice mail delays. The robot follows an invisible, fluorescent stripe on the hallway floor, stops at preset locations and beeps for human loading and unloading.

Cover Girl, the cosmetics firm in Hunt Valley, Md., sells its youth-oriented brand in drug stores and doesn't have fancy makeup counters in department stores. The firm has an interactive World Wide Web site (www.covergirl.com) that offers a virtual makeover with personalized makeup recommendations.



One size doesn't fit all, even for mice. Contour Design in Salem, N.H., has a line of computer mice in sizes to accommodate people with especially small or large hands. The ergonomic mice typically cost $79.95.

Send your alt.cw contributions to mbetts@cw.com. If your item is used, you'll receive a cool T-shirt.

Inside Lines

Usenet thread lags at Sybase

Amid the usual onslaught of postings about system hangs and bad SQL statements, a thread on Sybase's ability to rise again popped up on the comp.databases.sybase newsgroup the week before Christmas. Some of the initial postings probably didn't give Sybase executives a warm holiday feeling. One person praised Sybase's SQL Server database but said the company "couldn't market gold bars." Another SQL Server user said that given a second chance to choose a database, "I would do a lot of things differently."

In the laptop of luxury

Although Delta Air Lines began testing individual power supplies for laptop computers on business-class seats last summer, Canadian Airlines International has pulled in front of the notebook competition by equipping all of its Boeing 767s for in-seat laptop use. The power supplies are in business class only, and Canadian Airlines officials said the aim is to create a mobile office for business travelers.

The gift that keeps on giving

A new year means another round of date-sensitive computer viruses, starting when the Joshi virus goes off Jan. 5 and the Jerusalem virus hits Jan. 25. For a handy list, go to www.antivirus.com/calendar.html. There, Trend Micro in Cupertino, Calif., offers a free calendar that attaches to your monitor and highlights trigger dates for 1997.

Have you ever been experienced?

It was a much-anticipated session at a recent Year 2000 Issues & Answers Conference and Exposition in Chicago. About 125 attendees were patiently awaiting the start of a panel discussion, "User Experiences & Lessons Learned." But after 15 minutes, facilitator Lee Freeman of Management Support Technology in Framingham, Mass., hadn't appeared. Nor had any panelists to share their "secrets to success" in solving their millennium conversions. The discussion was canceled, the attendees left and the secrets stayed secret. Later, Freeman said he couldn't line up users for the panel because companies with potential problems don't want to let the public in on them.

Houghton Mifflin site gets overbooked

The response to a frantic electronic-mail message spreading rapidly across the Internet under the subject "Urgent — Books for Charity" overwhelmed the message's originator, publisher Houghton Mifflin Interactive. The company's "Share The Spirit" messages-for-books campaign would send one book to a hospitalized child for every 25 messages the publisher received. "We thought we were being ambitious trying to get 50,000 messages," said Erica Kobrin, Houghton Mifflin Interactive's marketing coordinator, "but in the last days, we were getting over 20,000 a day." The publisher finally decided to shut down the E-mail address. On a cheery note, Houghton Mifflin sent out 2,500 books to children's hospitals from Boston to Los Angeles.

Lifting big chunks of data

IBM plans to announce new heavy-lifting features for its Adstar Data Storage Manager (ADSM) backup software. ADSM soon will be able to back up individual files as large as 2G bytes, much larger than anything the package can handle now. Additionally, IBM last week made available Webahall, a World Wide Web interface to manage ADSM backups on any platform. It adds special features to back up files stored in IBM's Distributed File System. ADSM has about 100,000 installations.

Hostess Twinkies maker Interstate Brands in December launched Planet Twinkie, a Web site (www.twinkies.com) for aficionados of the golden brown snack with the delicious cream filling. Hostess introduced the Web page to the press with a release and — what else? — a pack of Twinkies. If you have press releases, news tips or sugary treats, send them to news editor Patricia Keefe at (508) 820-8183 or at patricia_keefe@cw.com.

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